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[REDACTED]

ECLECTIC MANUAL, NO. 5.

THE

ECLECTIC PRACTICE

IN

DISEASES OF CHILDREN

FOR

STUDENTS AND PRACTITIONERS

BY

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PREFACE.

THE original intent of the author was to make a revision of "Scudder's Diseases of Children," but this plan was abandoned and instead of a revision, the old work was used as a basis for a new one. It will be seen that in some places, as for instance, Infantile Therapeutics, comparatively few changes have been made, whilst in others, for example, part third, the entire work has been partially rewritten.

To the sections, Diseases of Nutrition, Diseases of the Heart, and Diseases of the Peritoneum, many new chapters have been added, while that part of the work devoted to Diseases of the Nervous System, Digestive Organs, Liver, Eye, Ear and Skin, have been both rearranged and rewritten. Naturally, older and somewhat antiquated classifications and subdivisions have been displaced by those more modern, obsolete remedies being omitted and replaced by newer or more effective additions to the *materia medica*.

An effort has been made to have the work harmonize with the consensus of medical opinion, points of professional dispute and experimentation being avoided when possible. Authoritative publications on the several branches of medicine have been freely consulted as well as journal files and special treatises.

The treatment is essentially Eclectic, the therapy being based largely on our personal experience in practice. When vegetable remedies are named, as Aconite, Ipecac, Rhus

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Tox., etc., the Specific Medicines are understood, these preparations being the only plant liquids we use in our practice.

Our aim has been to offer a manual on "Diseases of Children" based upon the Eclectic System of Therapeutics according to the modern and approved Eclectic practice, which we hope has been creditably accomplished.

WILLIAM NELSON MUNDY, M. D.

FOREST, OHIO, May 1, 1902.

TABLE OF CONTENTS.

PART I.

INFANTILE THERAPEUTICS.

CHAPTER I.—General Considerations—Classification—The Nervous System—The Circulatory System and Blood—The Digestive Apparatus—The Excretory Apparatus—Direct Medication Pages 1-6

CHAPTER II.—Form in which Remedies should be Administered—Classification of Remedies—Remedies which Influence the Nervous System—Remedies which Influence the Circulation—Remedies which Influence the Temperature—Remedies which Influence the Respiratory Apparatus—Remedies which Influence the Digestive Apparatus—Remedies which Influence the Urinary Apparatus—Remedies which Influence the Skin — Antiseptics — Antirheumatics — Antiperiodics. Pages 6-89

PART II.

CARE AND MANAGEMENT OF INFANTS.

CHAPTER III.—Washing the Child—Clothing the Child—How often should the Child be Washed?—Attention to the Cord—Ulceration of the Umbilicus—Excoriation and Chafing—Does the Child need Medicine immediately after Birth?—Difficulties in Nursing the Child—Food for the Child—Weaning the Child—Sleeping—Regular Habits . . Pages 90-107

PART III.

DISEASES OF CHILDHOOD.

CHAPTER IV.—Anatomy and Physiology—Diagnosis—Temperature—Pulse—Respiration Pages 108-118

CHAPTER V.—DISEASES OF NUTRITION.

Malnutrition—Marasmus—Scorbutis—Rachitis.
* Pages 118-130

CHAPTER VI.—DISEASES OF THE DIGESTIVE APPARATUS.

Dentition and its Derangements—Stomatitis—Catarrhal Stomatitis—Aphthous Stomatitis—Ulcerative Stomatitis—Thrush—Gangrenous Stomatitis—Acute Pharyngitis—Chronic Pharyngitis—Adenoid Growths of the Vault of the Pharynx—Tonsillitis—Gastralgia—Vomiting—Acute Gastritis—Chronic Gastritis—Colic—Diarrhoea—Acute Gastro-Enteritis—Cholera Infantum—Ileo-Colitis—Tabes Mesenterica—Constipation—Faecal Obstruction—Foreign Bodies—Volvulus—Intussusception—Appendicitis—Prolapsus Ani—Intestinal Worms—Hernia Pages 130-230

CHAPTER VII.—DISEASES OF THE LIVER.

Icterus—Icterus Neonatorum—Jaundice after Early Infancy—Congestion of the Liver—Fatty Liver—Amyloid Liver—Abscess of the Liver—Cirrhosis Pages 230-244

CHAPTER VIII.—DISEASES OF THE PERITONEUM.

Acute Peritonitis—Chronic Peritonitis—Tubercular Peritonitis Pages 244-250

CHAPTER IX.—DISEASES OF THE RESPIRATORY APPARATUS.

Introduction—Conformation of the Thorax—Respiration—Cough—Percussion—Auscultation—Coryza—Chronic Catarrh—Laryngitis—Catarrhal Laryngitis—Pseudo-Membranous Laryngitis—Spasmodic Laryngitis—Œdema Glottidis—Acute Bronchitis—Chronic Bronchitis—Acute Broncho-Pneumonia—Lobar Pneumonia—Pleurisy Pages 250-307

TABLE OF CONTENTS.

vii

CHAPTER X.—DISEASES OF THE HEART.

- Introduction—Congenital Diseases—Pericarditis—Acute Endocarditis—Chronic Endocarditis Pages 308-323

CHAPTER XI.—DISEASES OF THE GENITO-URINARY ORGANS.

- Introduction—Acute Nephritis—Chronic Nephritis—Diabetes—Diabetes Insipidus—Diabetes Mellitus—Anuria—Enuresis—Renal Calculi—Vesical Calculi . . Pages 323-346

CHAPTER XII.—DISEASES OF THE GENITALS.

- Malformations—Imperforate Urethra—Phymosis—Paraphymosis—Exstrophy of the Bladder—Undescended Testicle, Cryptorchidism—Balanitis—Urethritis—Hydrocele—Vulvo-Vaginitis—Masturbation Pages 347-358

CHAPTER XIII.—DISEASES OF THE NERVOUS SYSTEM.

- Introduction—Convulsions—Epilepsy—Tetanus—Tetany—Chorea—Disorders of Sleep—Night Terrors, Pavor Nocturnus—Acute Meningitis—Simple Acute Meningitis—Tubercular Meningitis—Cerebro-Spinal Meningitis—Hydrocephalus—Infantile Cerebral Paralysis—Acute Myelitis—Infantile Spinal Paralysis—Multiple Neuritis—Curvature of the Spine Pages 358-427

CHAPTER XIV.—Adenitis—Chronic or Tubercular Adenitis.

Pages 427-436

CHAPTER XV.—THE SPECIFIC INFECTIOUS DISEASES.

- Diphtheria—Variola—Varioloid—Vaccina, Vaccination—Varicella—Rubeola—Rubella—Scarlatina—Pertussis—Whooping Cough—Parotitis, Mumps Pages 436-494

CHAPTER XVI.—Infantile Syphilis Pages 494-504**CHAPTER XVII.—Tuberculosis Pages 504-514****CHAPTER XVIII.—FEBRILE DISEASES.**

- Pathology of Fevers—Significance of Fever in Children—Classification of Fevers—Febricula—Malarial Fevers—Intermittent Fever—Masked Intermittent Fever—Remittent Fever—Typhoid Fever Pages 514-555

CHAPTER XIX.—DISEASES OF THE EYES.

Blepharitis—Catarrhal Conjunctivitis—Phlyctenular Conjunctivitis—Ophthalmia Neonatorum—Interstitial Keratitis Pages 555-567

CHAPTER XX.—DISEASES OF THE EARS.

Otitis—Foreign Bodies in the Ear Pages 567-572

CHAPTER XXI.—DISEASES OF THE SKIN.

Miliaria—Erythema—Urticaria—Erysipelas—Furunculosis—Impetigo Contagiosa—Herpes—Eczema—Pemphigus—Tinea Trichophytina—Scabies—Nævus . . . Pages 572-61

CHAPTER XXII.—Rheumatism Pages 606-61

DISEASES OF CHILDREN.

PART I. INFANTILE THERAPEUTICS.

CHAPTER I.

It is generally admitted that there are sufficient differences in the action of remedies upon the adult and child to demand a careful study of the subject. While all practicing physicians are impressed with this fact, every one will admit the difficulty of making the distinction, so that the student of medicine will readily appreciate it.

These differences may be appropriately classified under the heads of: Their Action upon the Nervous System—upon the Organs of Circulation and the Blood—upon the Digestive Tract, and upon the Excretory Organs.

THE NERVOUS SYSTEM.—The nerve centers of the child are immature and more easily influenced for harm than in the adult. We notice, first, that they are very easily excited (*irritated*), and in consequence there is determination of blood. The immature structures do not resist this morbid influence well, hence we have excitation of function—restlessness, wakefulness, undue expenditure of nerve force, deranged circulation and nutrition, and convulsions.

Second, That there is a greater tendency to impairment of circulation (stasis), giving rise to congestion and consequent functional lesions. In this case structural changes take place rapidly, and prove a frequent cause of death.

Not only is there this tendency in disease to affect the nervous system of the child, but many remedies influence the nervous system in these ways. As we progress in the description of remedies, we will have occasion to study this action.

This fact, though it leads us to great caution in the use of remedies, and to a careful observance of those symptoms which experience has shown to foreshadow these nervous disturbances, point out the course of therapeutic study likely to prove most valuable. As all processes of life are, to a greater or lesser extent, under the influence of the nervous system, we may so guide them by medicinal action upon the nerve centers as to remove disease.

This subject should also be studied with reference to infantile *hygiene*. *Rest to the nervous system* is of the highest importance to the young child; especially is this the case when, from disease or other cause, there is an imperfect performance of the functions of digestion, nutrition, or secretion.

What we mean by rest here is, an avoidance of all causes of irritation or excitement, whether physical or mental. In a case there will be some more or less easily removed physical irritation, which it is the duty of the physician to point out to the mother, and, if necessary, to give instructions for proper management. Frequently we find such irritation of the skin, from want of cleanliness, or more frequently from too frequent and hard rubbings with an irritant soap. The most common physical irritation is from confining the child with its clothing, and thus preventing a healthful change of position and the natural movements of its limbs and body.

Most persons fail to appreciate that the child is a sentient being, capable of receiving mental impressions and being pleasantly or painfully impressed by them. If we should say that the child is more impressionable than the adult, receives more pleasure, suffers more pain, and that both influence the powers of life more, we would but state the case as it presents itself to those who have most thoroughly studied children.

We frequently meet with parents who seem to have no mental balance; now they are the most loving, then they are harsh, passionate, and wholly without reason. In sickness, and when occasion offers to give advice, the injury both to the physical and mental welfare of the child should be pointed out, and the influence of the physician thrown in favor of a systematic effort for self-government.

In some diseases, rest to the nervous system is absolutely essential to life; in all it is of much importance. We will, therefore, carefully guard our own association with the child, that it may not be a source of irritation, calling the attention of parents to it, and prescribing remedies with reference to it.

THE CIRCULATORY SYSTEM AND BLOOD.—Derangement of the circulation forms a very important part of most diseases of children. Very slight and temporary diseases present often marked change of pulse, while in the more grave affections it forms the basis of both functional and structural lesions.

But while the circulation is thus easily deranged by causes of disease, it is readily reached and easily amenable to remedies. Possibly there is no part of the practice of medicine that will give more satisfaction than the use of remedies for this purpose.

The blood of the child seems less subject to zymotic influences than the adult. Typhoid and typhus fever are

of rare occurrence, and epidemic dysentery and like affections pass the little ones by. On the contrary, the susceptibility to the eruptive fevers is greatest in early life.

Lesions in blood-making are common in childhood, especially those that form the basis of diseases of the lymphatic system.

Deficient blood-making, though not more common than in the adult, is less easily influenced by medicine. Possibly because the digestive processes can not be stimulated by the same active tonic medicines.

THE DIGESTIVE APPARATUS.—The digestive tract is very susceptible to the action of irritants, which unfavorably influence or arrest the processes of digestion, giving rise to crude and imperfect products, and deterioration of the blood; not only this, but the influence upon the sympathetic nervous system is very marked, and is sometimes extended to the cerebro-spinal centers. A very common as well as marked example of this is, convulsions from irritation of the stomach or intestinal canal, and which also manifests itself in the form of nervous irritability, restlessness, and sleeplessness, which, as we have already seen, are to be carefully avoided.

As the vegetative functions are in a very active condition, the child suffers more from deprivation of food than the adult. It has always seemed to me that the most serious error in the treatment of diseases of children was the use of such means as would impair the power of the stomach to digest food, and destroy the appetite. Making no provision for a supply of nutritive material, the waste of the body would be stimulated to excess, and the child's life rapidly exhausted; using a homely simile, "it was burning the candle at both ends."

THE EXCRETORY APPARATUS.—As there is less waste of tissue, the excretory organs are not so active as in the

adult, neither do they possess the power of sustained activity under the influence of medicines. While it will be found quite as easy to temporarily increase excretion, it requires much care to sustain these processes. Over-stimulation frequently leads to such exhaustion that excretion is almost wholly arrested, and the little patient dies, poisoned by its own excreta.

I do not know of any one point in infantile therapeutics that is more essential than this, in the more grave diseases. Given a disease that will require one or two weeks for its progress, and we may see how essential it is that the daily waste of tissue should be promptly removed. And we can never afford to hazard the successful termination of such disease, for the uncertainty of aborting it by over-stimulation of the excretory organs.

DIRECT MEDICATION.

In the treatment of the diseases of childhood especially, I prefer direct or specific medication, as I do in the treatment of the adult; but I find more directness of action in the case of the child, possibly because it is more free from the effects of a false civilization.

In the majority of cases the following rule will be found to yield the greatest success: "Never give a dose of medicine unless you see clearly the indication for that particular medicine, and have a reasonable certainty that its action will be beneficial." This rule, if persistently followed, will lessen the amount of medicine administered several hundred per cent.

We have not yet specifics for any disease, but we have specifics for pathological conditions; and, properly employed in the order in which these pathological conditions take precedence, they offer a direct and very certain treatment for diseases.

In the employment of remedies, we find greater success from doing *one thing at a time*, and, as a general rule, from the use of single remedies or very simple combinations. If we properly appreciate the different parts of a disease, we will find that they hold the relation to one another of cause and effect; that there are some primary, and others secondary and dependent upon the first; and in the use of remedies we give those first that meet the primary lesion, and follow with such as reach the indications of cure in the order named.

In the treatment of diseases of children, as elsewhere, there is the constant tendency to view the sum of pathological processes as a unit, and to meet this at once. Though a physician knows well, if he reflects, that recovery will occupy days, he gives remedies to accomplish it in hours. All the remedies that would seem to be indicated in the whole treatment are given the first and each succeeding day.

The true method is, to make a thorough analysis of the disease, and separate it into its component parts; determining also the order of these. Then remedies are selected, not with reference to the name, but with their application to correct and clearly understood pathological change of function or structure.

CHAPTER II.

FORM IN WHICH REMEDIES SHOULD BE ADMINISTERED.

Success in the treatment of diseases of children will depend much upon the form in which the remedies are administered. The first object is to have the proper med-

icine; the second, is to introduce it into the circulation without exciting any morbid process. It matters little with what skill the disease is diagnosed, or the remedies selected, if they fail to gain entrance into the blood. I doubt not that any physician can call to mind cases which will verify this statement.

The form of a medicine, then, is very important, and deserves our careful consideration. The remedy should not be objectionable to the taste, if it is possible to avoid it; for the unpleasant taste excites disgust, followed by more or less nausea, and during this but little if any absorption takes place. If now such remedy is repeated every one, two, or three hours, the disgust and nausea may be rendered persistent, and the remedies fail to produce the desired effect, because they do not get into the circulation where they may act.

Many remedies undergo decomposition if retained in the stomach any considerable time, and either lose or change their medical properties; hence, another reason for proper attention to the form, as well as some other accessories to their proper administration.

Next to having the remedy in a pleasant form is, to have it in solution or readily soluble in the gastric fluids. To gain entrance into the blood it must be in perfect solution, and a^t time is an important element in treatment, it is well to see that the remedy has these desirable qualities given it before it is introduced into the stomach.

I prefer specific medicines, and usually administer them with water. A very good method is to prepare the remedy in a half glass of water, so that the proper quantity will be contained in a teaspoonful. I find that the slight taste is not objectionable, and to the child it does not look like medicine.

The mixing of medicines in compounds, using some syrup as a vehicle, and attempting to disguise the taste

with peppermint, cinnamon, or something worse, is too disgusting now for the well-trained adult, and I do not wonder that it is objectionable to the child.

Powders are generally more objectionable than mixtures, not only on account of their taste, but the difficulty in swallowing them, and their unpleasant influence in the stomach. They are also frequently less soluble, and are absorbed with greater difficulty.

Syrups are not so objectionable in taste, yet frequently the sugar ferments in the stomach, producing irritation. They are, however, very uncertain in their composition, and hence should be dispensed with.

Occasionally we may employ the more powerful medicines by the use of homœopathic pellets. They are easily prepared, but the dose is minute and not definite in quantity.

THE DOSE OF MEDICINE.

The dose of medicine should be as small as will give the desired result. The harsh and immediate action of medicine is not usually desirable, but rather that gentle influence which is in the direction of healthy action, and which may appropriately be termed physiological. It is now generally admitted that the doses of medicine have been much too large, and that much injury has been occasioned by this over-medication.

In this, as in other things, there is a happy mean, which, when found, gives the best results. The doses recommended in this work are the maximum. The minimum, though not infinitesimal, would generally be regarded as too small to produce an effect. The human body, however, is a very delicate mechanism, and its processes most easily influenced, and we may readily believe that it may be acted upon by anything of positive quality and appreciable quantity.

A considerable experience in the treatment of diseases of children has convinced me that the various processes of life are influenced with more certainty, and with far less liability of injury, through the sympathetic system of nerves, and that a very gradual influence is far more desirable than a speedy one.

Another very important point in infantile therapeutics is, that the medicinal influence be continued until the desired result is obtained. In other words, that, as the ultimate object is to be slowly obtained, and that by repetitions of the remedy, gradually increasing its influence from dose to dose, the doses should be so frequently repeated as not to lose the influence of one before another is given.

Medicine should seldom be left for the sick to be given in drops, especially with children, who would suffer most from deviation in this respect. Let the remedy be added to some vehicle—water is the best—so that the dose will be a teaspoonful, and it is then in a form to be most readily absorbed.

CLASSIFICATION OF REMEDIES.

The classification of remedies is a work of no little difficulty, if we are to study them according to their specific action, which is the only method that will advance the practice of medicine. In the treatment of diseases of children, at least, we will abandon the old methods of large doses, with their poisonous effects, and substitute the small doses of pleasant medicine, kindly in its influence upon the body, and directly antagonistic to the processes of disease.

Whilst we administer medicines, for the most part, according to specific indications—special symptoms pointing out the remedies—some are given for their well-

known physiological action, and because they influence special parts in a well-known way. A large number of our remedies may be classified according to their action upon special parts or functions, and I can not but think that such grouping will be of advantage.

We will, therefore, study our remedies as—1. Those which influence the nervous system; 2. Those which influence the circulation; 3. Those which influence the temperature; 4. Those which influence the respiratory apparatus; 5. Those which influence the digestive apparatus; 6. Those which influence the urinary apparatus and its secretion; 7. Those which influence the skin and its function; 8. Those which oppose the malarial poison—antiperiodics; 9. Those which oppose the process of sepsis—antiseptics; 10. Those which oppose rheumatism—anti-rheumatics; 11. Those which oppose the syphilitic poison—anti-syphilitic.

REMÉDIES WHICH INFLUENCE THE NERVOUS SYSTEM.

Gelsemium,	Nux Vomica,	Ammonium Bromide,
Belladonna,	Phosphorus,	Ammonium Carbonate,
Rhus,	Chloroform,	Ammonium Iodide,
Bryonia,	Passiflora,	Chamomilla,
Lobelia,	Chloral,	Œnanthe Crocata.
Pulsatilla,		

As has already been remarked, "the nerve centers of the child are immature and more easily influenced for harm than in the adult." It might also be stated that the nervous system of the child suffers more from disease, and remedies influencing it assume a more important place in infantile than in adult therapeutics. It would sometimes seem as if the old doctrine—"that all diseases have their origin in wrongs of innervation"—was more than truth, at least, our acting upon it would be more nearly right than he who is always "acting upon the bowels."

The influence of the nervous system, even the brain, upon the processes of vegetative life, is much more marked than in the adult, and the relief of a wrong of innervation will many times occur, when remedies directed to the disease as classified have no effect. Instances will continually come up in practice, when single remedies like Rhus, Gelsemium, Belladonna, Bryonia, etc., are sufficient for the cure of seemingly complex diseases.

The evidences of disease here will soon become plain to the careful observer, as he studies the position of the body, its movements and expression, the expression of the face, its color, the expression of the eyes, color, dryness and moisture, dilatation or contraction of pupil, temperature, and the frontal, orbital and facial expression of pain. We do not claim that this is to be learned in a day or a year, but it will be learned in a satisfactory degree by him who gives it his attention.

If now we take some common examples, we may see the truth of the above. For instance, here is a patient (a grave case of disease) who is restless, starts in sleep, cries out suddenly and shrilly; we look at the face, which is contracted, especially about the eyes or base of the brain; the eyes are bright, and evidently the little patient suffers pain, as shown by the contraction of the frontal and orbital muscles. We give Rhus in small doses, and all the unpleasant symptoms fade away. Here is another, suffering from fever or inflammation, which shows a flushed face, bright eyes and contracted pupils, with increased heat; there are restlessness, sleeplessness, it may be threatened convulsions, and thinking of the usual means, it is a bad case. We administer Gelsemium with Aconite, and there is a speedy and marked amendment.

GELSEMIUM. *Specific Indications.* — The face is flushed, eyes bright, pupils contracted, temperature increased, nervous system excited, patient restless and wakeful.

Dose. — R Gelsemium gtt. x. to gtt. xx., water ʒiv.; a teaspoonful every hour. When the irritation is very great, and the patient is threatened with convulsions, the dose can be increased.

Gelsemium asserts an influence on the circulation like Veratrum and Aconite, but less marked, and not so certain, and it is not for this purpose that I employ it. It has a specific action upon the cerebro-spinal nerve centers, and to a less extent upon the sympathetic system. It relieves irritation and determination of blood, and the disordered innervation that flows from it. This is a use that renders the Gelsemium a remedy of great value in treating the diseases of childhood. The action is so certain and definite that we prescribe the remedy with great satisfaction. Given a case of fever or inflammation, in which the child is uneasy, irritable and restless, the face flushed, the eyes bright, the pupils contracted, and head hot, Gelsemium removes in a few hours all the unpleasant symptoms.

It is also one of our most valued antispasmodics. Its use is in those cases in which the convulsions are due to irritation of the cerebro-spinal centers or of the sympathetic. In a case of acute disease, the child presenting those involuntary twitchings of the muscles which indicate the approach of convulsions, there being the flushed face, bright eyes, and irritability, Gelsemium wards off the approaching spasms, and relieves the child of them when they have appeared. Through this same influence on the nervous centers, it exerts a beneficial influence in whooping cough, laryngismus stridulus, and nervous cough.

Gelsemium also has an important action on the urinary organs, which it is well to notice here. Occasionally a case of dysuria will be met with, consequent upon irritation of the neck of the bladder or spasmodic stricture of the urethra. Gelsemium will overcome the obstruction and cause a flow of urine, in a majority of cases.

BELLADONNA. *Specific Indications.* — The patient is dull, drowsy, comatose, dull heavy headache, the face dull and expressionless, the eyes dull, pupils dilated or immobile, capillary circulation sluggish, as marked by deep color of skin or redness that is effaced by pressure of the finger, which leaves a somewhat persistent white line. Passage of large quantities of limpid urine, involuntary passages of urine.

Dose. — R Belladonna gtt. v. to gtt. x., water $\frac{5}{4}$ iv.; a teaspoonful every one to three hours.

Belladonna has a powerful influence on the vaso-motor nerves. In large medicinal doses it is a depressant to the motor nerves and exerts a quieting influence on the sensory nerve filaments. Through its influence on the nervous system it quickens the pulse and stimulates the cardiac muscles.

Belladonna causes contraction of capillary blood-vessels, doubtless by stimulation through the sympathetic nervous system. Hence it is the remedy for congestion. Stasis of blood, or congestion, occurs in dilated capillary blood-vessels; indeed, this condition of the capillaries is the cause of congestion.

While this influence is exerted upon the entire circulation, it is most marked upon the circulation of the nerve centers. Thus we regard Belladonna as specific to congestion of the brain and spinal cord, and the dullness and coma which are symptomatic of it. In this respect Belladonna is the opposite of Gelsemium, which removes irritation and lessens determination of blood, the condition being an active one.

Hence, in convulsions or nervous diseases, with evidences of congestion and characterized by the indications given above, it is the remedy.

RHUS TOXICODENDRON. *Specific Indications.* — The patient is restless, starts suddenly in sleep, sudden sharp

cry, contraction of muscles about eyes and at base of brain, sharp frontal pain, especially in left orbit, small pulse with sharp stroke, tongue shows small red papillæ at the tip, erythematous flushing of surface, burning pain of surface, local pain sharp and burning, small vesiculæ about mouth and sometimes upon the skin.

Dose. — R Rhus gtt. v., water $\frac{5}{4}$ iv.; a teaspoonful every hour.

This has a very extended use in the treatment of diseases of children. Commencing with the cases in which cerebral disease is a prominent complication, or indeed the principal element of the disease, we find that this remedy relieves the excitement, promotes normal innervation through the sympathetic, and thus restores the circulation, waste and nutrition of the brain. It not only relieves the brain and spinal cord, but it exerts a marked influence upon the circulation of blood, upon the temperature, upon waste and secretion, and upon nutrition. In the cases of cerebral irritation, when the face presents a pinched appearance about the eyes, and the pulse is sharp and frequent, and the child awakens suddenly from the sleep with a sharp cry, it is the remedy.

It presents us one of the most marked examples of the truth of the therapeutic maxim, "where a remedy is specially indicated, it will favorably influence every function of life, and sometimes do everything that needs be done to effect a cure." It is valuable in diseases caused by zymotic poisons, as typhoid fever; the wrong of innervation is characterized by the frequent, small, sharp pulse, red mucous membrane, sordes on the teeth, tympanitic abdomen and acrid discharges from the bowels and bladder.

Thus a malarial fever having the pronounced indications for Rhus will be cured by it better than by Quinine. An inflammation of the eyes, of the lungs, of the bowels,

of the urinary apparatus, or of any part, yields readily to Rhus, when it is specially indicated.

It is a remedy frequently demanded in erysipelas and erysipeloid diseases, and in many endemic and epidemic diseases of children. Its use in the eruptive fevers and in diseases of the skin will be named hereafter.

BRYONIA. *Specific Indications.* — Headache in right side, with flushed right cheek; pain in serous cavities, with tension of muscles, and moderate tenderness on pressure; sharp, lancinating pain, with tension of tissues; hacking cough with pain; dry skin, sensitive; hard pulse, with moderate fullness, sometimes corded; rheumatic pain.

Dose. — By Bryonia gtt. v. to gtt. x., water $\frac{5}{4}$ iv.; a teaspoonful every hour.

Bryonia will be found a prominent anti-rheumatic, and also a remedy for pain, especially when the pain is increased by pressure and aggravated by motion. Physiologically it has been found to exert a special influence upon serous membranes, and when our little patient complains of pain in the articulations, abdominal pain with tenderness, pleuritic pain, headache, with tenderness of the eyes and temporal regions, tensive pain in the ears, we think of this remedy.

It is a prominent remedy in diseases of the respiratory apparatus — the cough irritative, hacking or rasping, pleuritic pain, soreness as if the parts were bruised, or soreness and tenderness of larynx and supra-sternal notch. It does not matter whether the disease is pneumonia or bronchitis, the Bryonia acts well.

In pleurisy it tends to prevent the effusion, and if the effusion has taken place, it hastens its absorption. It may be given in the stage of pyrexia with Aconite, but is probably more efficient after the acute symptoms have subsided.

I wish especially to call attention to the abdominal pain and tenderness in typho-malarial fever, and in some zymotic diseases, as calling for this remedy. It may also be associated with Ipecac or Euphorbia in cholera infantum, when there is abdominal tension, or swelling and pain of articulations.

AMMONIUM BROMIDE. *Specific Indications.*—Sudden movements of body or extremities, jerking of the tendons, twitching of the facial muscles, want of accommodation in the eyes, eyes turned upward; face unusually pale, and pulse small.

Dose.—For a child one to two years of age, I would prescribe, $\frac{3}{4}$ j. to $\frac{5}{4}$ j. to water $\frac{5}{4}$ iv.; a teaspoonful sufficiently often to control the symptoms and give rest.

I employ Ammonium Bromide to relieve the irritation of the brain and spinal cord, which gives rise to convulsions. It may be used to prevent the occurrence of convulsions when threatened, or to prevent their recurrence when arrested by other means. Regarding the remedy as a stimulant to the nerve centers, we would use it when there was evidence of an enfeebled circulation of blood to the brain.

There are a few cases of whooping cough in which Ammonium Bromide will be found curative. In these there is an epileptiform movement of muscles of the extremities associated with the cough, and even the convulsive movements of the chest may be distinct.

When convulsive disease has assumed a chronic form, as in epilepsy, I regard the Ammonium Bromide as one of our most certain remedies. Its influence in childhood is more marked than in the adult. And its curative action is of course greater at the commencement of the disease than when it has continued for several years. In cerebral irritation it will promote sleep, when that function is interfered with.

PULSATILLA. *Specific Indications.* — The child is restless, weary, cries frequently, sobbing even in sleep, face pale and expressionless, pulse small and feeble.

Dose. — $\frac{1}{2}$ Pulsatilla gtt. x. to 5ss., water $\frac{3}{4}$ iv.; a tea-spoonful every three or four hours.

Though Pulsatilla has a more direct action upon the reproductive organs, and is especially useful in diseases of the female, it still has its place in diseases of children.

In pale neurasthenic children, who are restless, with active imaginations and a fear of impending danger, Pulsatilla excels.

In nervous heart troubles and headaches, where little patients are pale, nervous and restless.

Though useful in nervous troubles, Pulsatilla is not the remedy where there are irritation and determination of blood.

LOBELIA. *Specific Indications.* — The pulse is full and oppressed, or slow; breathing difficult, rattling of mucus in chest; dull, expressionless face. Dull eyes, somewhat swollen, threatened convulsions, restlessness, with uneasiness of bowels.

Dose. — The dose will vary from gtt. j. to 5ss., to that which will prove nauseant or emetic. To relieve restlessness and pain, and improve the circulation and respiration, the old prescription — $\frac{1}{2}$ Lobelia 3j., Comp. Spirits Lavender 3ij., Simple Syrup 5iss. — will be found very good.

Lobelia has no superior as an antispasmodic outside the anæsthetics.

It produces a decided impression on the nervous system, especially upon those parts supplied by the pneumogastric, and is indicated by the slow and oppressed pulse, as well as by the small, feeble pulse, with a labored action of the heart, and difficult, painful respiration.

The Lobelia is a powerful antispasmodic, the conditions being as above named — an oppressed circulation. It is

a stimulant to the brain and spinal cord, to the respiratory system, and to the ganglionic nerves. If the condition of the nervous system in convulsions is such as to require a stimulant, then Lobelia is a remedy.

To quiet irritation of the nerve centers and give rest, the remedy must be given in doses less than nauseant. As above remarked, it may be combined with an aromatic, or alternated with Aconite or Nux. It also relieves irritation of the stomach, upon which the restlessness many times depends.

NUX VOMICA. The child is restless, draws up its legs, contorts its body, screams violently, wakes suddenly from sleep with crying, face flushes — intestinal irritation, colic, increased nervous sensibility. The face is pallid, sallow, yellowness about mouth, tongue pallid, nausea and vomiting, child uncomfortable, restless, sleepless, pallid, expressionless face and tongue, food distresses it, urine free but high colored, colors the napkins.

Dose. — R Nux gtt. v. to x., water $\frac{5}{4}$ iv.; from one-fourth to one teaspoonful every half-hour or hour.

Nux undoubtedly relieves irritation of the brain and spinal cord, when the circulation to these centers is enfeebled. Nux is useful in all cases of functional nervous atony or depression, when there is no organic disease, and which is unaccompanied by acute inflammatory action.

In such diseases as multiple neuritis or diphtheritic paralysis, where there seems to be a deficiency or irregular supply of nerve power, when the acute symptoms have subsided, Nux is an excellent remedy.

One might think, from its kindly action upon the intestinal canal and associated viscera, that the relief depended wholly upon this, but I am satisfied that it is not so. When the face is pallid and the pulse feeble, I have seen it relieve the patient from threatened convulsions, give rest and good sleep.

In infantile paralysis and want of development of the extremities, it is a remedy to be thought of if the circulation is feeble. When the respiratory movements are feeble, in malarial disease, I would suggest Nux. It is not so important in retention of urine as Santonine, but it may occasionally be used with advantage.

It is the tonic of childhood, or rather the stomachic; for it is kindly received by the stomach and is not as objectionable to the taste as the most of bitters, while it increases the appetite and the power to digest food.

When there is great depression of the nervous system, without fever or inflammation, it may be used with advantage. As an adjuvant to Quinine in periodic diseases, especially in intermittent fevers, Strychnine will serve a good purpose, and in some old cases, where Quinine has been used to excess, we may arrest the periodic disease by its use.

ERGOT. *Specific Indications.* — Dullness, stupor, dull eyes, expressionless face, pulse slow and oppressed, tendency to congestion, hemorrhages.

Dose. — R Ergot gtt. v. to ʒj., water ʒiv.; a teaspoonful every hour to three hours.

The influence of Ergot upon the system is very similar to Belladonna, and as there is no other place where it can be more properly described, we will place it here. I have employed it in cases where there was an oppressed condition of the nervous system, with a tendency to coma, a labored respiration, and full oppressed pulse. In those cases in which, with such symptoms, there are convulsions, it will be found particularly useful. I should prefer Belladonna in febrile diseases; Ergot in non-febrile. Aside from this action, Ergot is useful in restraining hemorrhage, as epistaxis, pulmonary hemorrhage, etc. In excessive sweating, hypostatic, pulmonary and other congestions it is useful.

AMMONIUM IODIDE. *Specific Indications.*—Headache, with dizziness, unsteadiness of walk, feeble or sluggish circulation.

Dose.—By Ammonium Iodide grs. x. to 5ss., water 5iv.; a teaspoonful four times a day.

The indications for this remedy are occasionally met with in diseases of children. Sometimes the lesion of brain is purely functional, but at others it will be found strumous or syphilitic. In the latter cases, I employ this and the Potassium Iodide, where the tongue is broad and pallid; Donovan's solution when it is small and red.

CHLOROFORM. *Specific Indications.*—Pain. Convulsions. Gall stones. Surgical operations.

We prefer Chloroform as an anæsthetic because of its speedier action, its more agreeable effect on the patient, and the greater ease of its administration. We have used it for years, without having a fatal case, and think that with care it is one of the safest remedies.

Chloroform is administered as an anæsthetic by using a folded napkin or handkerchief, cupping it, and sprinkling the fluid in the cavity. This is held over the nose in such manner that the vapor may be inhaled with a sufficient quantity of air. Especial attention is given to the respiration, which, if free, assures us that the patient is in no danger. If it becomes slow, difficult, or ceases, the inhalation is suspended, the child is turned quickly, and two or three smart blows on the chest or buttocks restore the respiratory function.

We use Chloroform by inhalation to relieve intense pain, and to arrest convulsions. Of course it is not often demanded for the first, and its use in the second case is frequently temporary—we control the convulsions for the time being, until the indicated remedy can be given, and has time to act.

One of the most powerful antispasmodics at our command is found in Chloroform. In the majority of cases it will be found safe as well as certain, but there is a class in which I think its use dangerous. There are cases in which there is congestion of the brain, and especially an impairment of innervation through the sympathetic nervous system, and a sluggish general circulation, with tendency to congestion of all important organs. It is somewhat difficult to diagnose such a condition; but the beginner will do well to reject the remedy when the breathing is labored, the pulse not much increased in frequency, when the eyes are congested and the lips present a continued dusky or purplish appearance.

Chloroform has been administered in very large doses with safety, though I do not think they should be recommended. As much as a teaspoonful has been given at once to a child two years of age, and repeated. A half teaspoonful is quite frequently named as a dose. I think that ten drops will usually produce the effect desired, and order the vehicle in such proportion as to give this quantity in a teaspoonful. Simple syrup, glycerine, or mucilage, are good vehicles for its administration.

CHLORAL HYDRATE. *Specific Indications.*—To relieve pain, promote sleep, arrest convulsions, and relieve the cough of nervous irritation. It is contra-indicated when the circulation is sluggish, when there is a tendency to congestion, pallid bluish lips, pale leaden tongue, dull eyes, and enfeebled respiration.

Dose.—The dose will vary from one-half to five grains, for a child two years of age, and it may be given with syrup and water, as—℞ Chloral grs. xx., simple syrup $\frac{5}{ss}$, water $\frac{5}{iss}$; dose a teaspoonful.

The element of danger in the administration of Chloral must never be overlooked. Adults have died from a dose

of but ten grains, whilst as much as three hundred grains have been taken with safety. If, however, the rule given above is observed, I think its use will be safe. It must be regarded as a temporary remedy only, and when the present emergency is passed it must be suspended for permanent remedies.

AMMONIUM CARB. *Specific Indications.*—The pulse is feeble, circulation to the surface imperfect, skin pallid or dusky, respiration difficult, restless and sleepless.

Dose.—Three to five grains in syrup or sweetened water.

Ammonia is an excellent diffusible stimulant, and may be employed in any case in which this action is desirable. The Ammonium Sesquicarbonate is a good form, and may be given in doses of one-half to three grains, in sweetened water. The action of Ammonium Carbonate is similar to that of the liquid forms of Ammonia.

It is useful in febrile or inflammatory diseases in which there is nervous exhaustion. Often in this class of cases it is better than Alcohol.

It is used either alone or with the Chloride in bronchitis, especially when occurring in babies or young children.

PHOSPHORUS. *Specific Indications.*—In acute disease there is a low grade of inflammation, with feeble circulation, and cerebral anaemia; urine contains mucus, sometimes pus, and is passed with difficulty. In chronic diseases, an enfeebled nutrition of the brain, imperfect retrograde metamorphosis and combustion, with caco-plastic or tubercular exudations.

Dose.—In acute diseases — $\frac{1}{2}$ Phosphorus gtt. j. to gtt. v., water $\frac{5}{4}$ iv.; a teaspoonful every one to three hours. In chronic disease I prefer the Hypophosphites: Hypophosphate of Lime gr. ss. to gr. j. three times a day; or the compound syrup of the Hypophosphites, one-fourth to one-half teaspoonful after meals.

In the exhaustion following summer complaint or cholera infantum, where there is red tongue and loss of appetite, use Syrup of Phosphates, or chemical food, ten to thirty drops.

Phosphorus is valuable in rachitis and osteomalacia, owing to its influence on the development of bone. It will be found a valuable remedy in cases of prolonged exhausting diseases when the nervous system is particularly affected.

PASSIFLORA. *Specific Indications.*—Irritation of the brain and nervous system; sleeplessness; in fact, wherever a harmless and certain soporific is demanded.

Dose.—Passiflora gtt. xx. to 3iv., water 3iv.; teaspoonful every one to three hours.

Passiflora is certainly a valuable remedy for the nervous diseases of children. It is of value in convulsions; probably not so good to allay the convulsions as some other remedies, as it is to remove the irritation that remains and to prevent a recurrence of the convulsions. It is a soporific of some power, and allays restlessness and induces sleep. It is especially valuable as a soporific when given in the sleeplessness of typhoid or other fevers. In such cases it promotes sleep by quieting nervous irritation.

It is said to be of value in epilepsy and cholera. In spasmodic incontinence of urine it certainly is of value.

MATRICARIA, OR CHAMOMILLA. *Specific Indications.*—Stimulant tonic and antispasmodic. In gastro-intestinal debility, flatulent colic, and nervous prostration. Diarrhoea, when the discharges are green, the child is irritable and restless, and the surface of the body is alternately flushed and pale.

Dose.—Matricaria gtt. xx. to 3j., water 3iv.; teaspoonful every hour or two.

Chamomilla is certainly among the best remedies we possess in infantile therapeutics, and has been largely dis-

carded for new ones possessing less value. In summer diarrhoea, when the child is extremely fretful and irritable and desires to be carried, Chamomilla will allay the nervous irritation and induce sleep. In teething children, that are fretful, feverish and cry constantly, it is of value.

In convulsions, when the same symptoms prevail, it will not disappoint you.

It is also said to be a good remedy in incontinence of urine, the symptoms outlined above being your guide.

ŒNANTHE CROCATA. *Specific Indications.*—Epilepsy, nervousness, frequent convulsions, and diseases resulting from malnutrition and anaemia of the brain and spinal cord.

Dose.—By Œnanthe Crocata gtt. iii. to v., water 5iv., teaspoonful four times a day.

The only use we have made of this remedy is in epilepsy and epileptiform convulsions, in which cases it is the ideal remedy for children.

REMEDIES WHICH INFLUENCE THE CIRCULATION.

Aconite,	Rhus,	Apocynum Cannabinum,
Veratrum,	Lycopus,	Strophanthus,
Gelsemium,	Lobelia,	Hamamelis,
Spiritus Ætheris Nitrosi, Digitalis,		Cactus.

Lesions of the circulation are met with in almost all forms of disease, and in many are a principal element, so that if the circulation is brought to a normal standard and kept there, the disease passes away. Readers will recall the teaching that there is in a majority of cases a *first element of disease* (basic element), upon which the disease is based, and which, if taken away, the other wrongs disappear of themselves. This is frequently the case with the circulation. Here is a fever or an inflammation, with a pulse of 120 beats per minute, small, and upon this as a base we have a temperature of 104°, arrested secretion, irritation of the nerve centers, and symptoms point to the

development of a typhoid condition. Aconite is given in the usual small dose, and as the pulse comes down to the normal standard, the temperature comes down, secretion is established, the nervous irritation and pain pass away, the appetite returns, and the patient convalesces. But one remedy has been used, yet everything necessary has been accomplished.

The association between frequency of pulse and temperature will be recalled: for every ten beats of pulse an increase of one degree of heat. If the pulse increases in frequency the temperature increases, as the pulse comes down the temperature comes down. With a high temperature every process of life is impaired, the cause of disease is intensified, and molecular death is rapid. As the temperature comes back to a normal standard the various functions are better performed, nutrition commences, causes of disease are less active, and the body frees itself from devitalized material.

Increased frequency of pulse intensifies inflammatory action, and looks toward death of the part. In inflammation of the respiratory apparatus, increased frequency of pulse causes increased frequency of respiration, cough, determination of blood, pain and unrest. We control the inflammatory process as we control and obtain a normal circulation of blood.

ACONITE. *Specific Indications.* — The pulse is small and frequent. (The indication is short but explicit.) The remedy influences special parts, as the throat, the larynx, bronchial tubes, and intestinal mucous membranes, the indication being irritation, with determination of blood.

Dose. — By Aconite gtt. iiij. to gtt. v., water $\frac{5}{4}$ iv.; a tea-spoonful every hour.

Aconite is one of the most important of remedies. Though many physicians say it is a dangerous remedy, we do not deem it so, when properly used.

It is the remedy for inflammatory action, and no matter what the part involved, the action is the same.

The pulse is *small and frequent*; it seems plain enough, and yet it is sufficient for all our purposes. If it is a fever, the temperature will be increased in proportion to the frequency of the pulse, and the remedy will then reduce the temperature as it brings the circulation down to the normal standard. The frequent small pulse is the indication in inflammatory disease when there is marked irritation and determination of blood (an active condition), but the remedy serves an equally good purpose if the circulation of a part is enfeebled — the pulse being small and frequent.

Looking at the action of remedies in the usual way, this seems very strange — a paradox — but there is much in nature that we have not unraveled. If we observe the action of Aconite in fever, we find that as the pulse diminishes in frequency it increases in freedom, and there is a better circulation. If we note its action in cholera, we observe that as the pulse loses its frequency it gains volume and freedom, and there is a better circulation of blood. If we note its action in active inflammation, we notice that it lessens determination of blood, quiets the irritation, checks the rapid circulation in the capillaries where it is too active, and increases the circulation where it is sluggish. If, as we think, it acts upon and through the ganglionic system of nerves, we can account for all of this by saying that it gives *right innervation*. I have been in the habit of saying that Aconite was a stimulant to the heart, arteries and capillaries, because, whilst it lessened the frequency, it increased the power of the apparatus engaged in the circulation.

In noting the special parts and tissues influenced by Aconite, we may commence with the tonsils, the fauces and pharynx, where its influence may depend somewhat upon its topical action when swallowed. It has a direct

influence upon the larynx, and is one of our best remedies in acute laryngitis and croup. Its influence upon the mucous membrane of the bronchia, even to the air cells, is very marked.

The topical action of Aconite upon the stomach relieves irritation, and frequently puts this organ in condition to receive remedies and food kindly. It acts directly in relieving irritation of the intestinal canal from stomach to rectum, and proves one of our most efficient remedies in diarrhea and dysentery, as well as in acute diseases of the associate viscera.

It will be noted that Aconite has a wide range of use, especially in diseases of children. It may be called, par excellence, the child's remedy, for the indication—small and frequent pulse—is a common condition in the acute diseases of children.

VERATRUM. *Specific Indications.*—The pulse is frequent and full, may be hard, but has the quality of strength. The circulation is active, the skin somewhat flushed. It is the remedy in inflammation when the circulation to the part, and in the part, is active, and where near the surface, when the surface is flushed red (the color of arterial blood).

Dose.—℞ Veratrum Viride, gtt. v. to gtt. xx., water $\frac{3}{4}$ iv.; a teaspoonful every hour.

Veratrum is the remedy for inflammation of the serous surfaces.

In pleurisy, peritonitis, or meningitis, it is the remedy in the congestive or hyperæmic stage.

In pneumonia, or inflammation of the substance of the lung, it is the best sedative we possess.

The indications for Veratrum are clear; they are the full, strong and frequent pulse.

It is the remedy for sthenia, when the heart and muscles have power, and the circulation is strong. It lessens the frequency of the pulse, gives a free and equal circulation,

lessens the temperature, and thus promotes better innervation and a better performance of all functions. Thus in many cases it will do all that is necessary to cure a fever.

Its action upon any part engaged in inflammation is of the same character, whether it be taken internally or topically applied. It checks determination of blood by relieving irritation, slows the blood in the capillaries when it is running too rapidly, and at the same time it gives strength to the enfeebled tissues. This action may be witnessed in cutaneous or subcutaneous inflammation, or in erysipelas when the part has the flush of arterial blood. It seems to make but little difference where the inflammation is located, as it influences the entire circulation.

It is claimed by some that Veratrum is one of the best alteratives in our *Materia Medica*, and it is true that in its influence upon the ganglionic nerves and the circulation, it puts the excretory apparatus in the best condition for its work, and favors retrograde metamorphosis.

It does not depress the heart of the patient, as has been taught. In medicinal doses it increases the strength, and favors normal functional activity, or it gives a better circulation of blood. Acting through the sympathetic system of nerves, it not only gives a slower and a better circulation of blood, but it influences every organ and part supplied by this system. It thus improves the condition of the stomach and intestinal canal, favors appetite, digestion and blood-making, and improves secretion.

Topically applied it relieves irritation, checks determination of blood, and arrests the inflammatory process. It has been used with the best results in this way, to control inflammatory action. It is employed as a local remedy in erysipelas when the inflammatory action is active, the part having the color of arterial blood.

GELSEMIUM. A study of Gelsemium has been given under the head of "Remedies which Influence the Nervous System."

System." Its influence upon the circulation is very direct, when the frequent pulse is based upon an excited condition of the nervous system. The flushed face, bright eyes, contracted pupils, with increased temperature, are the indications, but with this it lessens the frequency of the pulse, lowers the temperature, controls the inflammatory process and favors secretion and excretion.

The Gelsemium case has a vigorous circulation, the pulse being frequent and free, usually full, the capillary circulation also being free. Locally there are evidences of determination of blood.

RHUS. The reader will find a study of Rhus under the head of "Remedies that Influence the Nervous System," and we only need to study it here as it influences the circulation.

With a frequent, small, *sharp* pulse, frontal headache (left orbit), and red papillæ at tip of tongue, this remedy will slow the pulse, lessen the temperature, relieve pain, and establish secretion. It is true, it is usually administered with Aconite, but if one will give it alone he will find it all-sufficient. Burning of the skin is another very good indication, as is bright eyes.

Lycopus. *Specific Indications.* — The circulation is active, pulse frequent and hard, determination of blood to a part — lungs, stomach, bowels, kidneys — with sanguinous discharge or hemorrhage, cough, with sense of heat or burning in the chest, or sense of "rawness," with irritation.

Dose. — Rx Lycopus gtt. xv. to xx., water $\frac{3}{4}$ iv.; a teaspoonful every one, two or three hours.

This remedy is not in common use, yet it will be found of marked value, if the indications as above are followed. We employ it, more frequently, in diseases of the chest in the adult, and especially for active hemorrhage and an

irritative cough. In the child, it will be especially a remedy for chronic cough, irritation of bronchial tubes and lungs, and determination of blood to the kidneys.

LOBELIA. The *full, oppressed* pulse is the indication for Lobelia as a sedative. It is a stimulant to the circulation, giving power to the heart and arteries, and a better condition of capillaries for the blood to pass through. An enfeebled circulation in the lungs, with a sense of fullness and oppression, is relieved by Lobelia.

DIGITALIS. *Specific Indications.*—A small, frequent pulse, with want of power in the heart, is the best indication. A feeble circulation in lungs, or elsewhere, with scant urine, may also be benefited by this remedy.

Dose.—℞ Digitalis gtt. x. to ʒss., water ʒiv.; a tea-spoonful every one or two hours.

Digitalis is a stimulant to the heart, and acts as a sedative by improving the strength of the heart's action. It increases the force of the pulse and arterial pressure, slows the pulse and increases the pulse wave.

These results are due to the influences exerted by it upon the cardiac ganglia, the muscular fibers of the heart, bloodvessels and the vaso-motor center.

Digitalis might thus be truly called a cardiac tonic, and is used in heart disease where the enfeeblement or want of power in its action is the predominating symptom. In such cases it lowers the pulse-rate by increasing the power and force of the heart action. Dropsy, consequent to scarlatina, or from a feeble heart, is improved by digitalis. In these cases it increases the flow of urine by relieving congestion, and increasing arterial pressure and improving the circulation.

Much of the dissatisfaction with the action of Digitalis is due to an indiscriminate use of it; not paying attention to the indications calling for this valuable and powerful drug.

SPIRITUS ARTERIS NITROSI. *Specific Indications.*—The pulse is frequent but free, the skin inclined to be moist, frequent but scanty passages of urine.

Dose.—The dose will vary from gtt. j. to gtt. x. Usually we add a half teaspoonful to a half glass of water, and give it in teaspoonful doses every hour.

It is a little difficult for one who has been thinking of medicine in the ordinary way to think of Sweet Spirit of Nitre as a sedative. It is strong alcohol containing a portion of nitrous ether, and may be regarded as an alcohol, and as a stimulant, using this term as generally understood. But we have seen that the remedies classed as arterial sedatives are in reality stimulants; that is, they lower the frequency of the pulse by increasing the power of the heart and arteries, and by improving the condition of the capillaries.

The practitioner may occasionally use the Spirit of Nitre with marked benefit in simple fevers and inflammations, making it take the place of Veratrum or Aconite.

CACTUS GRANDIFLORA. The pulse is irregular, sometimes frequent, occasionally slow; there is a sighing respiration, sobbing, uneasy dreams, from which the patient wakes crying or sobbing; face is pale, eyes expressionless; pain in top of the head; sense of oppression in region of the heart.

Dose.—By Cactus gtt. v. to 3j., water 3iv.; a teaspoonful every one to four hours.

The action of Cactus is through the sympathetic nervous system and cardiac plexus. Its action is best obtained in functional rather than in organic heart diseases; therefore it is of value in nervous palpitations, characterized by weakness and a feeble pulse. In such cases it proves efficient, without any of the unpleasant features attributed to Digitalis. It is said to have an especial influence upon the circulation of the brain. It will be noted that in its

action it is apparently similar to Pulsatilla; but the indications as given will be a sufficient guide to the use of the remedy. The child is in poor health, pale and inactive; very sympathetic, suffers greatly from slight unpleasantness; sleeps in the day, wakeful and fearful at night; appetite variable; abdomen full or doughy. It may be a remittent or intermittent fever, threatened phthisis, or they call it worms; we give Cactus and the patient is relieved.

STROPHANTHUS. *Specific Indications.* — Weak, irregular heart action, cardiac disease, where diuresis is necessary. Cardiac disease in childhood and old age.

Dose. — Gtt. j. to gtt. x. in water, three or four times a day.

Strophanthus as a cardiac remedy in childhood is superior to Digitalis. Its field of action appears to be upon the cardiac muscle, and it possesses marked diuretic properties also.

Its action is quicker than Digitalis, and it possesses most of its advantages without its disadvantages; thus it seldom interferes with digestion and has no cumulative action. We prescribe no remedy with more confidence than we do Strophanthus.

In albuminuria following the exanthemata, when the action of the heart is weak and rapid, and the limbs edematous, it not only helps the heart, strengthening its action, but it acts as a diuretic as well.

In some instances of congenital heart disease, and in mitral lesions, where the action of a heart tonic, as well as a diuretic, is needed, it will not disappoint you.

The conditions and indications are so clear and sharply defined that further repetition is unnecessary.

HAMAMELIS. *Specific Indications.* — The veins are full and feeble, varicose, tissues soft, feeble, relaxed, swollen. There is fullness about the anus, prolapsus ani, difficult

evacuation of faeces, swelling of vulva or prepuce, oedema of legs, spongy throat, enlarged tonsils, abundant mucous discharge from nose, hemorrhage from atony.

Dose. — The distillate of Hamamelis may be given in doses of from one to ten drops, or in the usual way. **B** Hamamelis gtt. x., water $\frac{3}{4}$ iv.; a teaspoonful every one to four hours. As a local application it may be used of full strength, or diluted with two to ten parts of water.

Hamamelis is an important remedy, and when the physician learns to use it he will value it highly. The agent has a specific influence over the venous system, especially an enfeebled capillary circulation. As has been indicated, it is a valuable remedy, where we have an enfeebled mucus surface, indicated by the relaxed, swollen and thickened surface, evidencing feeble vitality and sluggish circulation. Hence, it is an admirable remedy in acute catarrh when secretion is established; in chronic catarrh, chronic pharyngitis and tonsilitis, when the child's voice is husky or flat; in chronic bronchitis, with free secretion; in mucous diarrhoea, abundant urine, but painful micturition; in hemorrhoids, prolapsus ani, otorrhoea, sprains, bruises, atonic inflammations, etc. Remembering that it strengthens and improves the venous circulation, freeing parts from congestion and giving them tone, we can hardly go astray in its use.

APOCYNUM CANNABINUM. *Specific Indications.* — There is oedema of cellular tissue, especially swelling of feet, eyelids, or of an inflamed part. The pulse may be frequent and full, or frequent and feeble, but capillary circulation is weak.

Dose. — **B** Apocynum gtt. x. to $\frac{3}{4}$ j., water $\frac{3}{4}$ iv.; a teaspoonful every one to four hours.

This is one of our best remedies, and the indications are so clear that no one can go astray — oedema, or even the appearance which a tissue presents when it has been infil-

trated with serum. In this, as with other remedies, it does not make any difference what name the disease has, if the indication is present. We use it with equal advantage in cholera infantum or in scarlet fever. It lessens the frequency of the pulse, gives a better circulation of blood, stimulates all the secretions, and improves nutrition.

If I notice in scarlet fever a fullness of the eyelids, or swelling of the feet, I give Apocynum. If in measles there is difficulty in breathing, with a harassing cough, and the face or feet are puffy, I give Apocynum. So I would in croup (inspiration difficult), in infantile remittent fever, in inflammatory diseases, in rheumatism, or in any chronic disease. In dropsy, no matter what the cause, it has few, if any, equals, nor does it make any difference what cavity or tissue is infiltrated. It stimulates the absorbents and gives tone to the bloodvessels, hence hastening absorption.

REMEDIES THAT INFLUENCE THE TEMPERATURE.

Baths,	Rhus,	Baptisia,	Cod Oil,
Aconite,	Gelsemium,	Acids,	Sulphur.
Veratrum,	Bryonia,	Alkalies,	

Among the means employed in the treatment and cure of disease, there are none of greater importance than those which rectify wrongs of temperature. The reader will recall the fact that a temperature of 98° is essential to health and the performance of healthy function. Even with but slight variation the person is ill, and the illness is in proportion to the amount of change. If the temperature falls below the normal standard, every function is impaired — the blood is not circulated well, respiration is feeble, appetite and digestion impaired, nutrition bad, and waste and excretion are imperfect. If the temperature is increased the pulse is more frequent, the nervous system excited (it may be wrong in kind or oppressed), the appetite lost, digestion imperfect, nutrition arrested, waste and

excretion diminished, and changes of the blood go on more rapidly.

In studying the means that regulate the temperature, it may be well to recall something of the physiology of heat production, and the means that nature provides to maintain this constant temperature of 98° . The heat is furnished by the combustion of food, and there are two, possibly three, elements here to be taken note of: (a) the quality, quantity and preparation of the food; (b) the introduction of oxygen by respiration for combustion; (c) the presence in the blood of certain materials (phosphorus, sulphur, etc.) which may be regarded as excitants of combustion. If a sufficient quantity of food is not taken, the body is burned to supply the necessary heat. If the body is burned, the person suffers the excitation of burning.

The temperature is regulated, in so far as the production of heat by combustion is concerned, by the ganglionic or sympathetic system of nerves. It is also regulated by the skin, which serves as a safety-valve for the body—opening to allow the escape of heat, when it is produced in too great quantity, and closing to retain it, when produced in too small quantity. Our remedies influence the temperature in both these ways; we control the processes of combustion through remedies influencing the ganglionic nerves, influencing the circulation, respiration and combustion; we influence the skin so as to put it in better condition for its work, increasing secretion and respiration for the removal of heat, stimulating it and giving it tone so that the heat may not escape.

BATHS. The importance of baths in the treatment of disease has been clearly shown in the past fifty years, so that but few will dispute their advantage, though in practice they may not use them. I think that the success of our school of medicine has depended as much upon our knowledge of bathing—the water cure—as upon the

administration of drugs. From the days of Beach we have been using cold baths, hot baths, alkaline baths, acid baths, tonic baths, stimulant baths, vapor baths, general baths, local baths, baths to reduce the temperature, to stimulate the skin and increase the temperature, to promote elimination, to increase the respiratory function, etc.

The Cold Wet-Sheet Pack is not used as frequently as it might be because people do not like the first impression of cold, and are afraid of it. In young children the nervous excitement from the shock is sometimes injurious, but if well borne, and there is a vigorous circulation, with increased temperature, its action is very kindly.

A sheet is wrung out of cold water and spread upon the bed, the little fellow is undressed, laid upon and wrapped up in it. Blankets and comforts are spread over and tucked in, and in a few minutes an agreeable warmth takes the place of the first impression of cold, the skin is moist, the pulse comes down, nervous excitement and pain pass away, and presently the child sleeps sweetly. It is allowed to remain in the pack for one hour, when the body is rubbed thoroughly dry, and dry clothing is put on.

The local cold pack may be employed in acute inflammation, with an active circulation, in pharyngitis, laryngitis, inflammation of bronchia or lungs, inflammation of bowels, etc. A towel wrung out of cold water, and covered with dry flannel, is a very good way to use it.

The indication is an increased temperature, with an active circulation.

The Hot Wet-Sheet or Blanket Pack is employed when the skin is enfeebled and inactive, especially in the eruptive fevers, and in local inflammations when the circulation is feeble. In measles, scarlet fever, or smallpox, the eruption fails to make its appearance at the proper time, the nervous system is oppressed, there is tendency to coma, and the skin shows a feeble capillary circulation. Here a

hot blanket pack, using the water as hot as it can be borne, is attended by the best results.

The local hot pack is used in acute inflammations when the life of the part is impaired and the circulation is feeble. We thus use it in sore throat, in croup, in inflammations of the respiratory apparatus, in diseases of the abdominal viscera, local inflammations, etc.

To determine whether a bath, either a pack or hand-bath, shall be hot or cold, is important, and we are guided by this: If the circulation is active and the temperature increased, it will be cold; but if the circulation is feeble, it is to be hot. A hemorrhage, or an abundant discharge of mucus or pus, or an increased secretion, is best treated with the hot local or general bath.

Simply Sponging the surface with water lowers the temperature by evaporation, and puts the skin in better condition to perform its function. We thus use it several times in the day when persons are suffering with fever and carrying a high temperature.

The Alkaline Sponge Bath is one of the old Eclectic means, and a very important one. Originally it was *broke* water, wood ashes being used in sufficient quantity to make the water slightly slippery to the touch; after this pearlash or potassium bicarbonate was used in place of the ashes. In more modern days sodium has taken the place of potassium, and now the alkaline bath is a sodium bath. The "broke water" or potassium was decidedly the best in the majority of cases, its action upon the skin being kindlier, leaving it in better condition. When I speak of the alkaline bath, I wish to be understood as recommending water made alkaline with potassium.

If one is in doubt whether the sponge bath should be alkaline or acid, he will do well to note the indications as presented by the tongue. If the tongue is broad and pallid, the bath should be alkaline; if red, especially if deep red, it should be acid.

The Acid Bath (water acidulated with vinegar) will be found to exert a very pleasant influence upon the skin, when indicated, leaving it soft and in better condition to do its work. The alkaline bath may have been used, leaving the skin drier and harsher than it was before, whilst the acid bath gives relief. The child's face and head are hot and dry, and the ordinary use of water does no good; it is sponged with vinegar and water and is relieved, and presently sleeps.

In some rare cases we use water acidulated with muriatic acid: in a larger number, especially where the symptoms are typhoid, and it is almost impossible to keep the child free from unpleasant odors, we use sulphurous acid.

Fatty Inunction is a most important means of putting the skin in better condition and rectifying the wrongs of temperature. Sometimes we use lard alone, the child being thoroughly rubbed with it, and then rubbed clean with soft flannel. In some cases we add Quinine to lard, 3ss. to 3j. to 3ij., especially when there is a malarial influence, or when we wish to stimulate the brain or spinal cord. In other cases, when stimulation is wanted, oil of cinnamon, cloves, or eucalyptol, is added.

In scarlet fever we sometimes use a "bacon rind," or a prescription of Creosote with lard, as a stimulant to the congested skin. It lowers the temperature, improves the circulation, gives better functional activity, and favors the appearance of the eruption.

In malarial or typho-malarial fevers I have seen the inunction of Quinine lower the temperature two degrees in as many hours, lessen the frequency of the pulse, and in a short time arrest the disease, when Quinine internally had not only failed to do good, but had proven harmful. In cholera infantum, especially if attended by fever, the Quinine inunction is one of our most important remedies.

We use inunction in chronic disease when innervation is

feeble, the appetite and digestion poor, nutrition imperfect, and skin atonic. In some cases it exerts a very salutary influence, and patients improve from the commencement of the rubbing.

The Stimulant Bath is occasionally useful when the circulation is feeble. It may be a mustard-water pack, when there is sudden and great prostration; Quinine with proof-spirit when there is a malarial influence; or an infusion of Xanthoxylum, Polygonum, or remedies of like character.

Tonic or Astringent Baths are employed in some cases where the skin is atonic and the circulation is feeble. An infusion of Hydrastis may represent the first, and of Quercus Rubra the second.

ACONITE. This remedy has been studied twice, but it will do no harm to look at it as a remedy influencing the temperature. We have already noted the relation between the pulse and the temperature, an increase of one degree of heat for each ten beats of pulse. If the pulse is lessened in frequency by remedies, the temperature comes down, and *vice versa*. All arterial sedatives are, therefore, thought to lessen the temperature, when above the normal standard, and this is especially true of Aconite and Veratrum.

But this remedy influences the functions of calorification directly through the ganglionic and respiratory nerves. We have been in the habit of thinking that it always lessens heat production, and it very certainly does so in many cases when the temperature is too high. But if one will administer the remedy in a case of congestive chill or cholera, when the pulse is small and running over one hundred beats per minute, he will see it increase the temperature, and parts that were cold regain their heat.

VERATRUM. This, like the preceding remedy, has a direct influence upon the function of calorification, as

it influences the circulation, respiration and combustion. All these are too active and characterized by strength, and Veratrum lessens the excitement and the activity. When indicated it will frequently lower the temperature from one to three degrees in twelve hours, and in minor diseases, like the coryza, or at the commencement of inflammations, it may bring it down to the normal standard in a very short time.

Its influence in superficial inflammation, when topically applied, is as marked. The irritation is relieved, determination of blood is arrested, and the temperature falls in a short time.

RHUS. We have studied Rhus as a remedy influencing the nervous system, but its influence in controlling the temperature is not to be neglected. It allays irritation of the nerve centers, especially of the ganglionic system, and slows the process of combustion. In the larger number of cases, when indicated, it markedly reduces the temperature, indeed, its action in this direction is quite as marked as any remedy of the *materia medica*.

BRYONIA. This is another remedy that lessens the function of calorification by relieving irritation of the ganglionic nerves, and possibly by its action upon the blood. It will be remembered that pain is one of the principal indications for Bryonia, and pain is the evidence of unrest.

GELSEMIUM. Gelsemium lessens the temperature by allaying the cerebro-spinal irritation which is back of ganglionic excitement. When indicated by flushed face, bright eyes and contracted pupils, its influence is very marked in this direction.

BAPTISIA. This remedy is fully studied under the head of Antiseptics, but it also exerts a marked influence in

lowering the temperature when above the normal standard. Like other remedies, it requires the special indications—the full purplish face, like one who has been exposed to severe cold, and a bluish-red tongue. In this case the high temperature is dependent, in part, upon a peculiar sepsis, and this being antidoted, the temperature falls rapidly. I have seen it come down, under the influence of *Baptisia* alone, from 106° to 100° in twenty-four hours.

ACIDS. *Specific Indications.*—The tongue is dusky red or deep red, and frequently small; mucous membranes and sometimes the skin show the same color. The coatings of tongue and sordes upon the teeth brown, growing darker as the disease progresses.

Dose.—Usually we order Muriatic Acid 3j., water, syrup, aa. 5j.; add to water so as to make it pleasantly acid, and give as patient will take it. In some cases a sharp, sparkling cider is used, and given a teaspoonful to a tablespoonful in water every three or four hours. In other cases an acid whey (lactic acid) will be taken by the patient, whilst the others will be rejected.

The truth of specific medication is well illustrated by the action of acids and alkaline agents in the cure of disease. That they are curatives no one will dispute; that they act equally well in the same cases, or that they can be taken by chance and get uniform good results, no one will claim. If they are to be used at all, we must have some means of determining when we shall use the one, and when the other. I determine this by the color of tongue, and where blood shows freely as in mucous membranes and some portions of the surface. If the color is deep or dusky red, an acid is wanted; if it is pale, pallid, the patient requires an alkaline salt.

Not only is the acid of advantage when given internally, but the acidulated bath is a means not to be neglected.

There are cases when the ordinary bath or the alkaline bath seems to make no impression upon the skin or the temperature, but when a little vinegar added to water is refreshing and cooling, the hot face and head sponged with vinegar and water have given relief, the irritation is quieted and the patient sleeps. The tense, hot abdomen, with skin like parchment, is softened, cooled and relieved of irritation by an acid bath or pack. It will not do to neglect the "small things" in the practice of medicine.

ALKALINE SALTS. *Specific Indications.* — The tongue is broad and pallid, and its coatings are white and pasty.

Dose. — If there is no special indication for another, we will employ a salt of Sodium, for Sodium is the salt of the blood. We add it, usually the Bicarbonate, to water in such quantity as to make a pleasant drink, and let the patient take it freely.

If there is marked muscular debility, we use a salt of Potassium in place of the Sodium.

If there is a tendency to subcutaneous inflammation, or inflammation and suppuration of cellular tissue, lime-water or Sulphite of Lime is to be given.

The indications for the use of the alkaline salts are so clear that no one can mistake them. Why they should lessen the temperature (when in excess), as do the acids, is more than we can say with our present knowledge; only this, that they correct a wrong of the blood and the fluids of the body, and, righting this wrong, they remove the nervous and vascular excitement which was caused by it.

The one thing in therapeutics that we can not have impressed upon us too forcibly is, that the prominent lesion, as indicated by those symptoms that point us to remedies, is very frequently the basis of the disease, and if taken away the entirety of the disease passes away of itself.

In our Western country, and where malarial diseases prevail, the alkalies are much more frequently indicated

than the acids; indeed, in some seasons diseases are cured by these alone. In rheumatic fever this is also the case in some seasons, and the indications for the alkaline salts being marked, they cure rheumatism.

COD LIVER OIL. *Specific Indications.* — The extremities are cool; the skin relaxed, doughy or dirty; tongue dirty at base; bowels irregular; pulse lacks strength; small boils; inflammation of cellular tissue; ulceration of the skin; bad blood.

Dose. — The dose of Cod Oil for a child will vary from one-half to two teaspoonfuls three times a day. A pure, inodorous oil will frequently be taken without difficulty.

The indications given above will point out the cases which will be benefited by Cod Oil. The processes of combustion do not go on well, the waste of tissue is not burned as it should be, and fitted for excretion, and the blood is loaded with it. This impairs the new blood that is making, the new tissues which are building, and enfeebles all the functions of the body. In this way the patient grows the conditions which give cacoplastic and aplastic deposits.

In some cases all the functions seem to be stimulated by the administration of the Oil. The skin becomes clean and active, the appetite improves and digestion is better, and there is an increase of tissue.

NUX VOMICA. This remedy has been fully studied elsewhere, and we have only to notice it here as a stimulant to the respiratory system, and an excitant of calorification. In cases where there is enfeebled spinal innervation and consequent respiratory function, Nux or Strychnine will be thought of as remedies. Sense of oppression about the praecordia, increased difficulty of respiration when asleep, tendency to retention of urine, slow movement of the bowels, and nausea, are indications.

STIMULANTS. There are a few stimulants which can be used with advantage to stimulate heat production, but their use is limited. Alcoholic stimulants are very rarely used in diseases of children, and possibly the only cases in which we would think of them is in the slow convalescence from acute disease. I am sure that their use during the progress of fever or inflammation is injurious. A tea-spoonful of brandy or good whisky in four to six table-spoonfuls of water (hot or cold, as suits the patient best) sweetened, sometimes is a good form.

REMEDIES THAT INFLUENCE THE RESPIRATORY APPARATUS.

The function of respiration is one of the most important in the economy, and the organs engaged in it may be regarded as almost the center of life — in the olden times classified as "noble organs." Through this apparatus the blood receives its supply of oxygen, and is freed from carbonic acid gas. It is intimately associated with the circulation, both in its structure and its innervation, and has sympathies with the entire body.

Remedies influence the respiratory apparatus and its function directly, as they influence other parts of the body, and a study of them in this relation can not but be profitable. The principal of these are :—

Aconite,	Eupatorium Perfoliatum,	Phosphorus,
Veratrum,	Stillingia,	Seneca,
Bryonia,	Lycopus,	Scillæ,
Ipecacuanha,	Drosera,	Sticta,
Lobelia,	Sanguinaria,	Rumex,
Phytolacca,	Euphorbia,	Grindelia.

ACONITE. We have made a study of this remedy two or three times, and need but note here its direct influence in relieving irritation and controlling inflammation of this apparatus. It has a direct action upon the tonsils, and

will sometimes arrest a quinsy, if used in the early stage. It is our best remedy in laryngitis or croup, giving results that can not be obtained with the old nauseant or emetic treatment. In mucous croup I rarely think of using any other internal remedy, and in the pseudo-membranous form it will be one of the most important. In acute bronchitis and in pneumonia it is the sedative usually indicated in childhood, and forms a part of a good treatment.

VERATRUM. Veratrum is the remedy selected when the pulse is full and frequent, and its action is direct in arresting inflammation of any part of the respiratory apparatus. It controls irritation of the pneumogastric, allays cough, and improves the respiratory function.

BRYONIA. This remedy influences the pleura and parenchyma of the lungs, lessening irritation and arresting the inflammatory process. It is indicated by pain in the chest, sense of soreness, with catching pain on inspiration, pleuritic pain, and a short harassing cough. The flushed right cheek is a good indication.

It is one of our most important remedies in this relation, and will be in frequent demand in bronchitis, pleuro-pneumonia, and in pleurisy.

IPECACUANHA. Ipecacuanha exerts a specific action in relieving irritation of mucous membranes, and we employ it in the first stages of bronchitis and pneumonia with the most marked benefit. In years past I have treated infantile pneumonia with Ipecac alone with much success. It was rubbed up with sugar and given in doses of one-fourth to one grain, sometimes producing slight nausea. Now we use it with Aconite, the proportions being — B Aconite gtt. iij., Ipecac gtt. v. to gtt. x., water $\frac{5}{4}$ iv.; a teaspoonful every hour.

LOBELIA. This remedy exerts a very marked influence upon the respiratory apparatus, improving the innervation and circulation. The indication is — an oppressed respiration, congestion, increased mucous secretion, moist blowing sounds, mucous rattling in the chest. When patients are old enough to complain it is of a sense of weight and oppression, especially about the praecordia.

The most marked benefit is obtained when there is a tendency to congestion, and when the respiratory tubes are filled with mucus. In asthenic bronchitis, when the child breathes with great difficulty, and the rattling of mucus can be heard all through the chest, I know of no remedy so certain to give relief. It is also one of our best remedies in infantile asthma.

In ordinary practice we use it with the sedatives, gtt. v. or gtt. x. being added to water $\frac{5}{4}$ iv. In asthenic bronchitis and in asthma, I frequently make the old prescription: Rx Lobelia $\frac{5}{4}$ j., Comp. Spts. Lavender $\frac{5}{4}$ ij., Syrup $\frac{5}{4}$ iss. Mix. Give in small portions, frequently repeated, just short of nausea. This will be found an admirable form for the remedy, as it is readily taken, is kindly received by the stomach, and it relieves nervous irritation and gives rest.

A description of Lobelia would not be complete without reference to its old use as a nauseant. For this use in diseases of children, I prefer the acetous tincture to other preparations. It is prepared in the proportion of four ounces of the herb Lobelia to the pint of dilute Acetic Acid, or vinegar; or the acetous tincture may be formed into a syrup by the addition of two pounds of sugar to the pint.

Given in nauseant doses, Lobelia relaxes the respiratory passages, and thus gives temporary ease to the breathing. In croup, in asthma, in bronchitis, and in whooping-cough, this action is very important. Continuing this

nauseant influence, there is increased secretion from the mucous membrane of the respiratory passages, and it is thinner and less tenacious than the secretion during the inflammatory process. The engorgement of the vessels is somewhat relieved by the secretion, and the mucus is removed with greater ease.

In administering the nauseants for this purpose, they should be repeated so frequently as to keep up a continued action; for if given at long intervals, the alternation of relaxation and determination of blood proves injurious; and to obtain this action, they should never be given to produce speedy emesis; indeed, emesis is not desirable in any case, unless to remove accumulations of mucus already secreted.

EUPATORIUM. When the pulse is frequent, full and free, and the skin inclined to be moist, the Eupatorium will be found a good remedy in bronchitis or pneumonia.

PHYTOLACCA. This remedy exerts a special influence upon the fauces and pharynx — the throat — and when this is inflamed or irritated, and is a source of cough or respiratory difficulty, we think of Phytolacca. A pallid tongue with red spots, sore mouth, sore throat, enlarged lymphatic glands or soreness or pain of mammary glands, associated with disease of the respiratory apparatus, call for Phytolacca.

STILLINGIA. *Specific Indications.* — Sense of rawness and tickling in the throat; sense of irritation behind the fauces or the velum pendulum palati; burning, itching of the larynx, which causes a short cough and inclination to hawk and free the throat; croupal cough and voice.

Dose. — By Stillingia gtt. x., Simple Syrup $\frac{5}{ij}$, one-fourth to one-half teaspoonful. I like the Linimentum Stillingia (By Oil of Stillingia $\frac{5}{ij}$, Oil of Cajeput $\frac{3}{j}$, Oil

of Lobelia 5ss., Alcohol $\frac{5}{j}$. Mix) in doses of one-half to one drop on sugar.

Stillingia is one of our best remedies for the relief of cough, when it is caused by a sense of irritation of the throat. We use it in chronic bronchitis, in acute bronchitis when secretion is established, and especially in laryngeal disease, and croup. Even the external application over the larynx will often cure croup. Usually I administer Aconite internally and apply the Stillingia liniment to the throat.

LYCOPUS. The pulse is frequent and somewhat full or hard, the cough paroxysmal, expectoration of muco-pus, difficulty in urination, hemorrhage from lungs or kidneys, deposit of tubercle.

Dose.—As a cough medicine I administer it in drop doses on sugar; for other purposes—℞ Lycopus gtt. x. to $\frac{5}{ij}$, Alcohol $\frac{5}{ss}$, water $\frac{5}{iiijss}$; a teaspoonful every one to four hours.

I like the action of Lycopus very much in chronic bronchitis, pneumonia, or tendency to phthisis pulmonalis. It relieves the cough, quiets pain, gives rest, diminishes the temperature, and brings the pulse down to a normal standard. It will also give good results in chronic inflammation of the kidneys, bladder and urethra.

SANGUINARIA. *Specific Indications.*—A sense of burning and constriction in the fauces or pharynx, with irritative cough and difficult respiration. The patient is nervous and restless, redness of nose with burning and thin acrid discharge, spots of bright redness on face or chest, redness and burning of the ears.

Dose.—The dose will depend upon the action wanted. Many times I use it in very minute doses—℞ Nitrate of Sanguinarine gr. ss., water $\frac{5}{iv}$; a teaspoonful every two or three hours (or Sanguinaria gtt. ij. to gtt. v., water $\frac{5}{iv}$).

In other cases I would use the acetous tincture in full doses to nausea for a temporary effect.

Sanguinaria is a stimulant to the mucous membranes, and its principal use is as a stimulating expectorant.

In bronchitis, where we find an atonic condition of the bronchial mucous membrane, slightly increased secretion, and an irritative cough, it is valuable; especially is this true in chronic bronchitis.

In subacute laryngitis, with a tickling cough, hoarseness, and constriction of the throat, we have often used it in lieu of the Nitrate.

In coughs from any source, when the patient complains of the throat being dry, constriction in the chest, difficult and asthmatic breathing, we find it a good remedy. The same is true in nasal catarrh, when there is much sneezing and a thin, acrid discharge.

It is also a good stomachic in atonic condition of the stomach and bowels, with an increased secretion of mucus.

It should always be used in small doses, else it proves nauseant.

Sanguinaria, used in combination with Lobelia, gives us our most efficient nauseant expectorant, and is the remedy we prefer in cases of mucous and pseudo-membranous croup. In small doses, so that it does not produce nausea, it becomes a stimulant expectorant, and will check secretion from the bronchial mucous membrane.

NITRATE OF SANGUINARIA. The Sanguinarine Nitrate is one of the few really good concentrated preparations. It is rarely used in the form of powder, being too acrid; but, combined with simple syrup, in the proportion of one grain to four ounces, it furnishes a very desirable remedy. Its action is rather that of a stimulant to the respiratory apparatus, and it should not be used in nauseant doses. The dose of the syrup will be ten drops for a child two years of age.

EUPHORBIA. This remedy, which is fully studied with those which influence the digestive apparatus, has an action very much like Ipecac, and may be used to quiet irritation of the bronchial tubes and to check profuse secretion.

Dose. — $\frac{1}{2}$ Euphorbia Hypericifolia gtt. v. to gtt. x., water $\frac{1}{2}$ iv.; a teaspoonful every hour.

PHOSPHORUS. This remedy, which has been fully studied in other relations, influences the respiratory apparatus in a direct manner, stimulating a better innervation and circulation. It may be prescribed in low grades of inflammation of the lungs and bronchia in minute doses, as — $\frac{1}{2}$ Phosphorus gtt. j. to gtt. iij., water $\frac{1}{2}$ iv.; a teaspoonful every hour.

SENEGA. *Specific Indications.* — The cough is deep, successive; much rattling in the chest; free expectoration of mucus, or muco-pus; skin is harsh and dry, and the epidermis desquamates, or it is relaxed, and the surface looks dull and dead.

Dose. — The Syrup Senega may be used in doses of one-fourth of a teaspoonful, as a stimulant to the respiratory apparatus. We may use Senega gtt. v. to gtt. xx., water $\frac{1}{2}$ iv.; a teaspoonful every one to three hours.

The stimulant influence of Senega upon the throat and bronchial mucous membrane is well known, and is probably its most important use. For this purpose I prefer to use it in the form of tincture to that of syrup, as commonly employed. In chronic bronchitis, with profuse secretion, it may be combined with small doses of Ipecac and Veratrum.

Its influence upon the kidneys and reproductive organs needs to be studied, and I have no doubt some important uses will be found for it. I have employed it in squamous disease of the skin, and like its action very much; it is one of a very few remedies that influence these diseases.

SCILLA. *Specific Indications.* — Cough, with secretion of a yellowish muco-pus, mucous rattling in the chest, scanty urine, feeble circulation.

Dose. — $\frac{1}{2}$ Acetum Scillæ 5ss., Syrup 5iss.; from one-fourth to one-half teaspoonful every one to three hours.

Squills is used either as an expectorant or diuretic. Use is made of its latter action in nearly all cases of dropsies. It is used as an expectorant in many troubles of the respiratory organs. It is used as an expectorant principally in bronchitis and in chronic bronchial catarrh, where there is an excessive secretion.

STICTA. *Specific Indications.* — The patient complains of pain in the shoulders, extending to neck and back of the head; the child will be observed to draw its shoulders upward, throw the head backward and move it uneasily. There is a harsh, dry cough, evidently from irritation, and not to remove secretion.

Dose. — $\frac{1}{2}$ Sticta gtt. v., water 5iv.; a teaspoonful every one to three hours.

Sticta acts upon the base of the brain, relieving irritation. The pneumogastric and the parts which it supplies are affected by it. By its sedative action upon the vagus it lessens irritation, lowers temperature, and controls cough, when these disorders depend upon wrongs of that nerve.

It is a very fine remedy when the indications are clear as above. Sticta is an excellent remedy for cough, relieves irritation, and improves respiration, acts kindly upon the stomach, and is one of our best anti-rheumatics.

RUMEX. *Specific Indications.* — Cough, with sensation of fullness in the chest, sighing, yawning, efforts to take a full inspiration.

Dose. — $\frac{1}{2}$ Rumex gtt. v., water 5iv.; a teaspoonful every one to three hours.

We employ Rumex in cases of *bad blood*, with disease of the skin; in such cases it is certainly one of the most valuable alteratives we have. In these cases we not only use it internally, but as a local application. In scrofulous disease, with deposit in glands and cellular tissue, with tendency to break down and feeble repair, I think the Rumex unequaled. Here, also, we use it internally and locally.

GRINDELIA. *Specific Indications.*—The breathing is labored and asthmatic; the cough hard, with rattling of mucus; sense of soreness and rawness of chest; chronic ulceration, with feeble venous circulation.

Dose.—℞ Grindelia $\frac{3}{j}$., Glycerine, Syrup aa. $\frac{3}{j}$.; one-fourth to one-half teaspoonful every two or three hours.

Grindelia may be employed as a cough remedy in fleshy children with feeble circulation, and in asthma with secretion, but want of power to expectorate. It is a stimulant to the respiratory apparatus and to the respiratory function. Locally (in the proportion of $\frac{3}{j}$. to water Oj.) it may be used in the cure of old ulcers, scrofulous ulcers, and as a means of discussing scrofulous enlargements.

HYPOPHOSPHITES. The Compound Syrup of the Hypophosphites will prove an admirable remedy to relieve irritation of the lungs, with atony, checking cough and giving increased respiratory freedom. At the same time it improves digestion, blood-making, and nutrition. The Hypophosphate of Lime is one of the most certain remedies I have ever employed in the early stages of pulmonary tuberculosis.

REMEDIES WHICH INFLUENCE THE DIGESTIVE APPARATUS.

It can not be too often impressed upon the physician that a good condition of the digestive apparatus is of first importance in the treatment of any form of disease. If stomach and bowels are in fair condition, we are careful

not to disturb them. If there is anything wrong with them, the first object of treatment is to right this wrong.

If we think of the function and relations of this apparatus, we can see additional reasons for the rule I have named. It is the inlet for all the fluid and the foods required by the body, and these are required for sustaining the life. In the olden time it was thought that the sick person required no nourishment, but we now know that the sick may be starved, and are frequently starved to death. A certain digestive power is necessary, even though we are careful to furnish food that requires but little digestion, and this requires a reasonably good condition of stomach and intestinal canal.

If one only thinks of the administration and absorption of medicines, he will see the necessity of the rule. Unless the stomach is in fair condition, medicines are not kindly received and absorbed. The right remedy may be selected, which, if it gained entrance to the blood, would do that which is needed for the cure; it is given, but wholly fails because absorption can not take place.

The sympathies of the gastro-intestinal canal are very numerous and very sensitive — indeed, it seems to be the center of morbid sympathies. If a distant part is involved in disease, the stomach speedily suffers; if the body at large is diseased, the stomach suffers. It is abundantly supplied with ganglionic nerves, and the solar plexus (the center of this system) lies immediately behind it, and is almost directly influenced from it. It is thus related to the circulatory, respiratory, and excretory apparatus.

EMETICS.

The act of emesis seems natural to the nursing child, relieving the stomach of repletion and nourishment that fails to digest. This would point out the first indication for emesis: to relieve the stomach of food that can not be digested, or that is undergoing fermentation.

For this purpose there is nothing better than warm water given freely, and its action in some cases of emergency assisted by tickling the fauces with the finger. A solution of common salt is also very good in such cases, and leaves no bad influence.

The second indication for the use of an emetic is, when there are morbid accumulations in the stomach, from undigested and fermenting food, or from an increased secretion of gastric mucus. It is met with occasionally in the first stages of severe disease, and is an unfavorable complication, for such condition of the stomach precludes the taking and digesting of food, and the proper appropriation of remedies. Frequently, in such cases, the medicines given will be ejected from the stomach two or three times a day, or may not be tolerated at all.

The third indication for the use of an emetic is, for the removal of material from the respiratory organs. This is generally mucus; occasionally mucus and pus. The emetic is only employed, in this case, when we have such evidence of the loosening of the mucus as will lead us to believe that it may be removed in this way. Emetics are employed in nauseant doses to aid in softening, diminishing the plasticity, and loosening such accumulations.

The fourth indication for the use of an emetic is, to rouse the nervous system from severe depression, and restore a uniform circulation of blood. For this purpose it is employed in scarlatina maligna, in the severer forms of rubeola and variola, and occasionally in other diseases.

IPECACUANHA. I administer Ipecac to fulfill the second indication of an emetic. It is given in the form of powder, mixed with warm water, and assisted in its action by warm water or some warm tea. The dose for a child two years old will be from three to five grains; for an infant, half to one grain.

ACETOUS TINCTURE OF LOBELIA AND SANGUINARIA.
R Lobelia, Sanguinaria, Ictodes, aa., $\frac{3}{4}$ ij.; distilled vinegar, Oij.; Alcohol, $\frac{3}{4}$ ij.: make Oij. of tincture by percolation; dose, from five to thirty drops.

To fulfill the third and fourth indications for an emetic, I prefer this preparation to any other that I have employed. It is repeated every five, ten, or fifteen minutes, until thorough emesis is produced, and its action is aided by warm drinks.

After the use of any emetic, the child should have warm drinks for some hours, but it is not necessary that they should be objectionable to the taste; a thin cornmeal gruel, or common tea, or hot water, does very well.

CATHARTICS.

The employment of cathartic medicines for every ailment, and in all conditions, is not only an absurd, but a very injurious practice. Instead of being a *cloaca* or drain for the effete materials of the body, it performs the most important part of the process of digestion; as an excretory organ its function is less than the skin, and two-thirds less than the kidneys.

Cathartics act upon the entire digestive tract, and in a manner subversive of natural processes. As the function of digestion is so important to health, furnishing the material for the nutrition of all structures, we should be very careful how we interrupt it and set up unnatural actions.

The frequent use of cathartics depends somewhat on the empirical benefit that follows their use in slight diseases. A person has a headache, a cathartic is taken, and the next day he is well; or he has an indigestion, and a cathartic, preventing his eating for the time being, makes him feel better in a day or two; or he has caught cold, and an active cathartic, acting as a derivative, gives relief. But

in these cases the influence is more apparent than real, time and abstinence from food being the important requirements.

It may be asserted that a person who habitually uses cathartics can not enjoy good health, and that the occasional use is injurious in the same proportion. I hold that they should never be employed unless there is a special indication for their use, which indication we will now consider.

The first indication for the use of a cathartic is, to remove accumulations from the bowels that are proving irritant. These are more frequently of undigested food, with the natural secretions. The symptoms are, an uneasiness of the child, manifestly from the abdomen; impaired or arrested appetite and digestion; a uniformly coated tongue, usually with a yellowish shade; and occasionally a peculiar, puffy, expressionless appearance of the face.

A cathartic is never indicated when the child is well, though the bowels have not moved for days.

The second indication for the use of a cathartic is, to produce revulsion or counter-irritation in case of serious disease of important organs.

The third indication for the use of a cathartic is, to promote the absorption of dropsical effusions. Even this use is becoming obsolete by the discovery of specific medicines for this purpose, without disturbance of the digestive tract.

Cathartic medicines are employed in small doses to stimulate the digestive tract, and increase its innervation and circulation. They increase the secretion of the digestive fluids, and thus improve digestion, and at the same time increase the activity of its excretory glandulae. For such purpose the remedy is thoroughly triturated with sugar, or sugar of milk, and the dose is below that which would prove laxative. Used in this way, some of this class furnish the most certain and efficient alteratives.

AMYGDALUS. *Specific Indications.*—There is irritation of stomach, with nausea, vomiting, sense of heat and burning. The tongue is elongated and pointed, with reddened tip and edges.

Dose.—We prefer an infusion of the fresh bark of the green twigs in half teaspoonful doses, but it may be used in the proportion of gtt. x. to gtt. xx., water $\frac{5}{4}$ iv. (a little ice may be added), in doses of half to one teaspoonful every fifteen to thirty minutes.

The peach-tree bark will be found an excellent remedy to relieve irritation and determination of blood, with its attendant nausea and vomiting. As it relieves gastric irritation, it will be found to give rest to the nervous system, and a better circulation of blood.

RHEUM. *Specific Indications.*—There is nausea, vomiting, uneasy sensation in stomach, irregularity of bowels, diarrhoea, with light-colored discharges.

Dose.—℞ Rheum gtt. v. to gtt. xx., water $\frac{5}{4}$ iv.; half to one teaspoonful every half hour or hour; or compound powder of Rhubarb $\frac{5}{4}$ j., boiling water $\frac{5}{4}$ iv.; make an infusion and strain, and give in half teaspoonful to teaspoonful doses.

Rhubarb is one of the best laxatives for children, owing to it containing some astringent properties. We find it good in summer diarrhoea, when the stools are light green in color, and we have reason to believe there are some irritable substances in the upper part of the bowels.

It is an old and favorite remedy with our school. The old compound powder in infusion was used to relieve irritation of the stomach, check nausea and vomiting, and cure diarrhoea. For the first purpose it was used in small doses frequently repeated; for the second, it was continued in teaspoonful doses until the discharges had the color of the medicine, then less frequently. Diarrhoea from cold was readily relieved by it, and it would cure the

simpler cases of cholera infantum or summer complaint. It will sometimes be found an excellent stomachic, improving digestion as well as relieving irritation.

IPECACUANHA. *Specific Indications.* — There is irritation of stomach, small or large intestine, with determination of blood; nausea, vomiting, diarrhoea, dysentery; the discharges in each case being somewhat violent and painful. Violent and expulsive cough, with sense of irritation and burning; mucus or muco-purulent expectoration; globular sputa, rusty; hemorrhage.

Dose. — Rx Ipecac gtt. v. to gtt. x., water $\frac{3}{4}$ iv.; a tea-spoonful every hour.

As we have previously noted, Ipecac is an emetic, the mildest we possess, yet in small doses it is a favorite remedy in disease of the stomach and intestinal canal. In children, when the stomach is loaded with undigested material, the powder, given in hot water, is a safe and efficient emetic, unloading the stomach and relieving the irritation.

In nausea or vomiting, either acute or chronic, with the elongated, pointed tongue, with reddened tips and edges, it relieves irritation and quiets nausea, checks vomiting, and improves the functional activity of the stomach. It is a very certain remedy in diarrhoea from irritation, with determination of blood, or in dyspeptic diarrhoea, from the simplest form to the severer cases of cholera infantum. It is undoubtedly the most efficient remedy we possess in dysentery, quieting irritation, relieving pain, and lessening the frequency of the discharges. In nearly all of these cases we generally use it in combination with Aconite.

EUPHORBIA HYPERICIFOLIA. *Specific Indications.* — Diarrhoea, sense of heat in stomach and abdomen; abdomen is hot to the hand, some tenesmus, with discharges, which are at times acrid. Bronchitis, with thin, acrid secretion.

Dose. — $\frac{1}{2}$ Euphorbia gtt. v. to gtt. xx., water $\frac{5}{4}$ iv.; a teaspoonful every one to three hours.

The Euphorbia is a most excellent remedy in the treatment of cholera infantum and in diarrhoea, filling a similar place to Ipecac. In some years it will be found preferable to this remedy; in other years the Ipecac will prove the best.

COLOCYNTH. *Specific Indications.* — Wandering pains in the abdomen, seemingly in the course and from contraction of the intestine; the intestines are felt to change their position; noise from the movement of the intestinal contents; tormina and tenesmus; dragging from the umbilicus; frequent desire to stool from pressure in the rectum, with burning sensations.

Dose. — $\frac{1}{2}$ Colocynth gtt. ij. to gtt. v., water $\frac{5}{4}$ iv.; a teaspoonful every one to three hours.

Colocynth is too harsh in its action to be used as a cathartic, unless in combination with other remedies. We use it entirely for its specific action in the small dose. Thus, in infantile colic, with free, acrid discharges, attended with tenesmus and constant straining, it will be found an admirable remedy, but the dose must be small; gtt. ij. or iij. of the Colocynth, in half glass water; teaspoonful every half hour or hour.

With the symptoms as above named, Colocynth is an excellent remedy for diarrhoea and dysentery. It relieves pain, checks the discharges, and promotes normal functional activity. In dysentery, it relieves the constant desire to go to stool, as well as the tormina and tenesmus preceding this desire.

HAMAMELIS. This remedy has been fully studied, and we notice it here as a remedy which gives tone to stomach and intestinal canal, allaying irritation and promoting functional activity. It may be used when the child persistently throws up its food, mixed with mucus; in diar-

rheœa, with large, light-colored discharges, and when there is prolapsus ani. If the abdomen is full and doughy, the remedy (distillate or Pond's Extract) may be used as a local application, and if there is relaxation of the perineum, with prolapse of the bowels, it may be locally applied to the parts.

CHIONANTHUS. *Specific Indications.* — Fullness in right hypochondrium; pain in hypochondria, extending to umbilicus; pain in right shoulder; yellow (jaundice) coloration of eyes and skin; colic, with excessively green discharges from the bowels; high-colored urine, coloring the clothing yellow.

Dose. — The dose will vary from gtt. v. in water $\frac{3}{4}$ iv., a teaspoonful every one or two hours, to gtt. j. to gtt. v. at a dose.

The Chionanthus will be found a most valuable remedy in the treatment of jaundice, and those painful affections of the bowels associated with irregular action of the liver. When the child suffers with infantile dyspepsia, and there is fullness in the region of the liver, it may also be employed.

UVEDALIA. *Specific Indications.* — Enlargement of the spleen; full abdomen, doughy; enlargement of the liver (liver-grown); enlargement of any part, the circulation being feeble and the tissues atonic.

Dose. — For children I only recommend it as a local application, the affected part being thoroughly rubbed with the ointment of Polymnia Uvedalia, or with one part of the tincture to two or three parts of cod-liver oil or sweet oil.

With the indications named there is no remedy equal to it. I have seen the enlarged spleen in the malarial fevers of infancy as early as the third month, and it will be found more frequently than physicians suspect. With this disease of the spleen the patient can not easily be cured of

the fever, or if the fever were stopped, he would still suffer from impaired blood-making (leukæmia). It is also valuable in chronic inflammations of any part, the circulation being feeble, and tissues atonic.

NUX. This remedy, fully described in the first class, has a direct action upon the gastro-intestinal canal. It is indicated by evidences of atony, and an enfeebled circulation. Nausea and vomiting, with a pallid, expressionless face, is speedily relieved by minute doses, as gtt. j. to water $\frac{3}{4}$ iv. We use it in the cure of diarrhoea, when the discharges are large, the abdomen full and relaxed, and when there is pain simulating colic.

It is one of our best remedies for infantile colic, if there are no evidences of irritation and determination of blood. The pulse is feeble, the extremities cool, and abdomen full.

It is an excellent stomachic, and if an indigestion depends upon an enfeebled innervation and circulation, the patient will be benefited by it. A sallow, expressionless face, yellowness about the mouth, slight yellowness of the eyes, and clay-colored discharges are indications for Nux.

In cholera infantum we say that Nux is the remedy when there is atony of the bowels, with feeble circulation; Aconite where there is irritation, with determination of blood, Ipecac or Euphorbia being associated with either.

CHELIDONIUM. *Specific Indications.*—Fullness in hypochondrium, tongue much enlarged and somewhat pale; mucous membranes full and pale; skin full and sallow, sometimes greenish; tumid abdomen; light-colored faeces; no abdominal pain; urine pale, but cloudy and of high specific gravity.

Dose.—By Chelidonium gtt. v. to gtt. xv., water $\frac{3}{4}$ iv.; a teaspoonful every two or three hours.

Chelidonium, though not a new remedy, seems to have been neglected. Recent investigations point to its having considerable influence in cancer.

It has a direct action upon the spleen and liver. It has been used for many years in jaundice and biliary colic. In diseases of the liver, it is indicated when there is diminished secretion of bile, evidenced by gray or gray-colored or very light stools; there may or may not be jaundice.

PODOPHYLLIN. *Specific Indications.*—The tongue is full, face full, abdomen full, veins full; enfeebled innervation through the sympathetic; dull pain, dull headache, dizziness.

Dose.—In diseases of children, I prefer a second decimal trituration, which may be given in doses of from one-eighth of a grain to one grain. In older children, granules containing one-fortieth of a grain of Podophylin, with one-eighth grain of Hydrastine (Berberine) Sulphate, may prove beneficial as a stimulant to the stomach and intestine.

We employ Podophylin and Podophyllum as a stimulant to the sympathetic nervous system, improving innervation to all parts supplied with ganglionic nerves. The indications for its use in wrongs of the digestive apparatus are those of atony — full, expressionless tongue, full abdomen, impaired functional activity. In gastric and intestinal dyspepsia, with these evidences of atony, hepatic torpor, heartburn and constipation, a trituration of Podophylin will be found an excellent remedy. The liver may be stimulated by it, the portal circulation improved, and the spleen relieved of its overflow of blood. In acute and chronic liver troubles it is a valuable remedy. In jaundice of children, we commonly use it in alternation with Chionanthus. If the stools are white and pasty, use it until they are colored.

Professor Locke recommends it highly in constipation of children. He advises that thirty grains of the second decimal trituration and one-half teaspoonful of brown sugar be added to one-half glass of water, and that a tea-

spoonful be given three or four times daily. He says it is safe and efficient.

We employ it as a remedy for diarrhoea when the abdomen is full and doughy, the discharges light in color, mucous, or containing undigested food. Of course, the dose is small—much smaller than most physicians use. Some cases of cholera infantum are cured with a trituration of Podophyllin, when the ordinary treatment has wholly failed.

HYDRASTIS. Specific Indications.—The mucous membranes are flushed; papillæ of tongue prominent and red; uneasiness in stomach; loss of appetite; impaired digestion; mucoïd matter with stools; circulation to surface and extremities feeble. Sore mouth, with increased mucous secretion, thick and tenacious saliva; sore throat, with muco-purulent secretion; sore eyes, with muco-purulent secretion.

Dose.—I prefer for use the yellow alkaloid Hydrastine or Berberin, which is very soluble; one grain to four ounces make a very good tonic, and is about the strength we would use as a wash for the mouth and throat or as a collyrium.

As a wash or for local applications, the colorless Hydrastis is a more recent and elegant preparation. Hydrastis has a specific local action upon mucous membranes, and no matter where the location, if a mucous surface exhibits a lowered tone, this remedy is of service. Thus, in stomatitis, vaginal and chronic nasal catarrh, with relaxed and atonic tissues, and abundant secretion, it is of value. It is said, also, to possess some anti-malarial as well as stomachic and tonic properties.

DIOSCOREA. Specific Indications.—Abdominal pain, shifting, paroxysmal, relieved by pressure or by supporting the abdomen and keeping the patient still. Skin soft, and

feels as if perspiration were about to start; extremities cold; uneasy sensation in lower part of the chest, with sense of constriction in epigastrium.

Dose. — R *Dioscorea* gtt. v. to gtt. x., water $\frac{3}{4}$ iv.; a teaspoonful every fifteen minutes to an hour.

Dioscorea is an excellent remedy in infantile colic, if it presents the symptoms named, but it will not do to use it when *Nux* or *Colocynth* is indicated. It is also an excellent diaphoretic, but when used for this purpose I administer it with hot water. Children will frequently show the evidences of cold, with tendency to cough, and the respiratory movement will be observed to be short, as if there were some obstruction in the lower part of the lungs. The *Dioscorea* is a good remedy in this case.

CHAMOMILLA. *Specific Indications.* — Infantile dyspepsia, with irregularity of the bowels; diarrhoea, with flatulence and colic, discharges contain curdled milk or other undigested food; the person is irritable and restless, and the surface alternately flushed and pale.

Dose. — R *Chamomilla* gtt. xxx., water $\frac{3}{4}$ iv.; a teaspoonful every one to three hours.

We have previously made a study of *Chamomilla*, under "Remedies which Influence the Nervous System," and introduce it here for the purpose of referring to its action upon the gastro-intestinal canal.

In summer diarrhoea we prescribe it more frequently than any other one remedy. The stools are green and watery, containing mucus and undigested food. The child is nervous, fretful, and irritable. The indications are plain, and the remedy goes straight to the spot.

LEPTANDRA. *Specific Indications.* — Fullness of abdomen, doughy sensation to touch; tongue full, pallid, and covered with pasty fur; stools papescent and light-colored; tawny, dirty skin, dirty eyes.

Dose. — Leptandrin triturated one to ten may be given in half-grain doses, or Leptandra may be used with glycerine or syrup so that the patient will get from one-fourth to five drops at a dose.

Leptandra has a special influence upon the entire glandular system, and improves the digestive function, stimulating normal excretory action from the bowels. We use Leptandra in diarrhoea of teething children, when the stools are watery, containing much mucus, with sallow appearance of the skin and tenderness over the liver.

MANGANESE SULPHATE. *Specific Indications.* — A pale, leaden tongue, dirty, with pendulous abdomen, and sluggish bowels; jaundice, with enlarged liver, fullness and weight in right hypogastrium, dropsy.

Dose. — For administration to children I prefer a second decimal trituration, of which one-half to one grain may be given every three hours.

PEPSIN. *Specific Indications.* — Gastric digestion is impaired, and nutrition is imperfect; there are eructations of food and gas, chylous or lienteric diarrhoea, abdomen full, urine cloudy.

Dose. — Of a good Pepsin one-fourth to one-half grain may be given with or after the taking of food.

CUPRUM ARSENITIS. *Specific Indications.* — Green, watery discharges from the bowels. Spasmodic pains in the stomach, bowels and extremities. Nausea and vomiting.

Dose. — Gr. 1-60 to half glass water; teaspoonful every hour or two. This is a comparatively new remedy; we have used it for four or five years with quite good results.

We have used it only in diarrhoeal affections of children with the above indications. It will be noticed that the dose is quite small. It has also been recommended locally in acute and sub-acute inflammations of mucous mem-

branes attended with pain, suffusion and more or less watery discharge. 1-100 grain in one or two ounces of water and applied at frequent intervals.

CASCARA SAGRADA. *Specific Indications.*—Constipation due to nervous and muscular atony of the lower bowel, with diminished sensibility; constipation depending upon indigestion and neglect.

Dose.—Gtt. v. to 3ss.

Cascara Sagrada is a laxative, and should never be used as a purge. In constipation it is the best laxative we possess, as it empties the bowel and acts as a tonic to the intestinal tract, thus in a measure obviating the necessity of a constant resort to laxatives, as is the case with most laxatives.

In habitual constipation we usually prescribe it morning and evening, gradually lessening the dose, until the remedy is stopped entirely.

SANTONINE. *Specific Indications.*—Fullness of the upper lip, white line around the mouth, picking at the nose, foul tongue, fetid breath, full pendulous abdomen, tendency to retention of urine.

Dose.—As a remedy for worms I usually combine it with Podophyllin as in the following—℞ Podophyllin gr. j., Santonine gr. x., Sugar, or Sugar of Milk 3j.; triturate thoroughly and make twenty powders, of which one may be given night and morning. In retention of urine I have it triturated with sugar, so that the child may have a dose of one-eighth to one-half grain every one to three hours.

Santonine is one of the best remedies we have to expel the *Ascaris lumbricoides*, and to so influence the mucous membrane that the intestine will not be a habitation for these vermin. The combination with Podophyllin is very good when there is atony with increased secretion of

mucus, but if there is irritation of the intestine, the remedy may be triturated with sugar and a minute portion of Ipecac.

In retention of urine in childhood it is *par excellence* the remedy, and I have not known it to fail in an experience of twenty years. It is not a question of how or why it influences the bladder, but the fact that when there is retention of urine, from one to three doses of Santonine will cause its passage.

ALOES. *Specific Indications.* — There is atony of large intestine and rectum, mucoid discharges, prolapsus ani, pruritus ani, Ascaris vermicularis.

Dose. — The remedy is a very nauseous one, and it is difficult to use it on this account. A second decimal trituration may be given in doses of one grain, or even a trituration of one to ten may sometimes be used. To remove the Ascaris vermicularis, and break up the conditions under which it propagates itself, I have found that the following prescription does well: Bʒ Aloes, Comp. Tinct. Cardamon, aa. ʒss., Syrup ʒj.; dose, one-half to one teaspoonful until it acts upon the bowels.

Aloes is a very slow acting cathartic, its effect being upon the lower bowels. If its use be continued too long, it produces atony, and may even induce a catarrhal condition of the rectum. As it is harsh in its action, it is usually combined with other remedies, as, for instance, Belladonna or Hyoscyamus.

REMEDIES THAT INFLUENCE THE URINARY APPARATUS.

We find in practice that, in a majority of acute diseases, the function of the kidneys will be re-established so soon as the circulation is controlled. Hence, in the common diseases of childhood diuretics are not required. In chronic disease, with deficient waste and excretion, they become our most important remedies.

Here, as in the adult, we recognize the two actions, *hydragogue* and *depurant*. In the first, the water of the urine is increased; in the second, the solid constituents are increased. The first may be used to lessen the volume of the circulating fluid, to remove irritations of the urinary passages by diluting the urine, and to promote the absorption and removal of dropsical deposits. The second, increasing the solids of the urine, are used to depurate the blood of worn-out and imperfectly formed material. They also stimulate the processes of retrograde metamorphosis, and thus facilitate the breaking down and removal of tissue, and indirectly its renewal.

We might give a long list of remedies influencing the urinary apparatus, but a few will serve our purpose, as in diseases of children especially the kidneys will do their work if the general conditions are right. The agents we will study are:—

Sweet Spirits of Nitre,	Apis,
Potassium Acetate,	Eryngium,
Eupatorium Perf.,	Cucurbita Citrullus,
Hydrangea,	Rhus Aromatica,
Lithium Benzoate,	Belladonna.
Gelsemium,	

SWEET SPIRITS OF NITRE. I name this remedy first, because it has been employed so extensively, and with good advantage, in diseases of childhood. In this case it is not only diuretic, but, to a slight extent, sedative — lessening the force and frequency of the pulse. It is only in the simpler forms of disease that I would recommend it. To two ounces of water, in a glass, add a teaspoonful of Spirits of Nitre, keep covered, and give a teaspoonful every two hours. This is the dose for a child from one to two years of age.

CUCURBITA CITRULLUS. An infusion of watermelon

seeds is a very mild unirritating diuretic in diseases of children. The only difficulty we find in using it is, that children will not drink unless they are thirsty; and in sickness they are very particular what they drink, and may not like watermelon-seed tea as a substitute for water.

POTASSIUM ACETATE. *Specific Indications.* — The tongue is full, pallid, slightly leaden, and coated with a pasty fur; the abdomen is full and doughy, and the skin dirty.

Dose. — Rx Potassium Acetate 3j., water 3iv.; a teaspoonful every two or three hours, with as much fluid as the patient can be persuaded to take.

Of the class *renal depurants*, Potassium Acetate is the most efficient. It is employed to increase the solids of the urine, and remove the waste from the blood. When given in large doses, and for some time, it breaks down feeble tissues, and thus hastens the removal of worn-out material. It is a good remedy in its place, but used to excess it is injurious.

In many cases it may be added to the child's drink, so that the necessary quantity will be taken in the course of the day, without its knowledge. For a child two years of age the medium quantity will be half a drachm each twenty-four hours.

Potassium Citrate, Bitartrate, Nitrate or Sodium Acetate may be used for the same purpose.

EUPATORIUM. *Specific Indications.* — There is a sensation of weight and dragging in the loins, retraction of testicles, frequent desire to urinate, scanty secretion of urine.

Dose. — Rx Eupatorium gtt. x., water 3iv.; a teaspoonful every one or two hours.

When there is a continued scanty secretion of urine, though the general wrongs have been looked after, we may think of the Eupatorium. The indications as given above will be found a good guide to its administration.

GELSEMIUM. Gelsemium has been studied in our first class, and we notice it here as a remedy directly influencing the kidneys, relieving irritation and determination of blood. The indications for it are, sharp pains in the loins and back, frequent desire to pass urine, which is passed in very small quantities, with tenesmus.

It is not only a remedy for irritation and determination of blood to the kidneys, but for irritation of any part of the urinary passages as well. In cystitis it is a favorite remedy, as it is in irritable or spasmodic stricture of the urethra.

ERYNGIUM. *Specific Indications.*—Frequent desire to pass water, with vesical tenesmus, contraction of abdominal muscles, drawing up of the thighs, scanty urine, acrid, irritating the external parts.

Dose.—Rx Eryngium gtt. x. to xx., water $\frac{3}{4}$ iv.; a teaspoonful every one to three hours.

Eryngium is an admirable remedy to relieve irritation of the bladder; and I have no doubt that it exerts quite as strong an influence upon the pelvis of the kidneys and ureters. It also increases the secretion of urine, which is less acrid and irritant.

BELLADONNA. This remedy has been fully studied, and we notice it here as a remedy for congestion or enfeebled circulation of the kidneys, and for diabetes and incontinence of urine. In cases where the patient complains of fullness, weight and dragging in the loins, we prescribe Belladonna. When the urinary secretion is too free, the urine of low specific gravity, the administration of Belladonna internally, or the application of a Belladonna plaster to the loins, is good treatment.

In incontinence of urine this remedy has given most excellent results, especially in those cases where there was inability to hold the urine during the day, and a dribbling away which soiled the clothing.

RHUS AROMATICA. This agent is highly recommended for incontinence of urine, especially for nocturnal incontinence. It is also used in irritable bladder; in chronic cystitis and urethritis; in phosphuria, and when there are mucoid discharges in the urine.

Dose. — Rx Rhus Aromatica gtt. v. to ʒj., water ʒij.; a teaspoonful every two or three hours.

HYDRANGEA. *Specific Indications.*— Irritable bladder and urinary passages, urine passed with difficulty and with tenesmus, blood in the urine, strangury, irritation of urinary passages, with cough.

Dose. — Rx Hydrangea gtt. v. to gtt. x., water ʒiv.; a teaspoonful every one to three hours.

APIS. *Specific Indications.*— Itching of the genitals; itching along the urethra; burning in the bladder; itching of the anus; itching and burning of the skin; eyes itch and burn; child wants to rub them frequently.

Dose. — Rx Apis gtt. ij to gtt. v., water ʒiv.; a teaspoonful every hour to three hours.

Apis has a specific influence upon the urinary apparatus and skin. In small doses it relieves irritation of the urinary organs.

It is a certain diuretic in suppression of the urine from atony, as well as an efficient remedy in retention of the urine and irritation of the urethra. The indications for it in urinary diseases are, a constant desire with an inability to void the urine.

With the indications as above named, it will be found an admirable remedy. I have seen it start a free secretion of urine in a few hours, when it had been nearly arrested. It relieves irritation of the nerve centers, gives rest, improves the circulation, and especially removes hyperesthesia of the cutaneous nerves.

LITHIUM BENZOATE. *Specific Indications.*— There is difficult urination, discharge of mucus, muco-pus or phos-

phates with the urine; the skin is doughy or waxy; the tongue dirty; the breath fetid, and general evidence of imperfect waste and nutrition.

Dose. — It may be given to a child two years old to the amount of from five to ten grains each day in the water the patient takes.

There are other salts of Lithii besides the Benzoate which are quite active. Thus, the Bromide is among the best in apoplexy and epilepsy.

The Citrate and Carbonate act as Lithii in the system, and promote the solution of uric acid and favor its elimination. They are useful in rheumatism, gravel, diabetes, calculous affections, and certain cases of irritable bladder.

REMEDIES THAT INFLUENCE THE SKIN.

It is hardly necessary to call attention to the importance of a healthy skin, as associated with good health, and to its impairment as a frequent cause and constituent of disease. This organ not only removes a large amount of nitrogenized waste, but it also regulates the temperature, and assists in the respiratory function. If its function as a regulator of the temperature (safety valve) is impaired, we will have a wrong of this condition of life which will work a wrong of every function of life. If it fails to do its work of excretion, the blood must suffer from the retained material, unless the kidneys and bowels do vicarious work. Impairment of the skin thus imposes additional labor upon the lungs.

In studying the pathology and therapeutics of the skin, we must not forget its intimate relationship with mucous membranes. The skin and mucous membrane may be regarded as one piece — folded in, forming the internal lining or envelope, covering the body as an external envelope. The sympathy between the two is so intimate that wrongs of the skin work wrongs of mucous membrane,

and wrongs of mucous membrane work wrongs of skin. An impairment of the functions of the skin may work such wrong of mucous membrane as to imperil life.

We see this illustrated in some of the simpler eruptions upon the skin. A child suffers from *heat*, or some of the simpler forms of erythema or urticaria, but as long as it is out freely upon the skin, the functions of the body are well performed. From some cause the eruption disappears (goes in), and at once the child is very sick, has bronchial irritation, croup, or intestinal irritation, with diarrhoea. A cure in such cases will come from bringing the eruption to the surface; prevention of disease will come by keeping the eruption on the outside.

The remedies we will study in this connection are the following:

Asclepias,	Stimulants,	Rhus,
Saffron,	Inunctions,	Apis,
Belladonna,	Nepeta,	Calcium Sulphide,
Eupatorium,	Serpentaria,	Arsenic.
Sedatives,		..

SEDATIVES. In proportion to the frequency of the pulse and the increase of temperature is the arrest of secretion. If, therefore, there is a frequent pulse, the first step toward obtaining a normal action of the skin is, to bring it down to the normal standard. The arterial sedatives thus become the most important diaphoretic means. With small and frequent pulse, Aconite is our best diaphoretic; with a full, frequent pulse, it is Veratrum; with an oppressed pulse, Lobelia, etc.

In a large number of cases of fever and inflammation, if proper means are used to lessen the frequency of the pulse, and bring the temperature to a normal standard, secretion from the skin is established in proportion as these effects are obtained. If secretion does not start as the pulse

comes down, very mild diaphoretic remedies will be sufficient to accomplish the purpose.

STIMULANTS. There are cases where, from a feeble general circulation, and an enfeebled skin, secretion can not go on. This will be known by the dull color, want of elasticity, coldness, and want of sensibility. In such cases anything that will stimulate the general circulation, and will stimulate the skin, its circulation, and improve functional activity.

INUNCTIONS. There are cases where fatty inunctions answer a better purpose than baths. The bath leaves the skin dry and harsh and inactive; the inunction leaves it soft and pliable, and in better condition for functional activity.

Sometimes we use lard alone, or, if there is a tendency to aplastic deposits, Cod-Liver Oil. When there is periodicity, or when we wish to get the action of Quinine, it is added to the lard. If we wish the inunction stimulant, we add one of the essential oils in small quantity.

In scarlet fever we sometimes have the patient rubbed thoroughly with a bacon rind or piece of fat bacon. Or we may order it from the drug store, as follows: Rx Creosote gtt. xx., Common Salt 5ss., Lard 3ij. Ammonia added to the lard makes a very stimulant application, and I sometimes order it when the skin is very feeble, or when it is necessary to bring an eruption to the surface, as — Rx Ammonium Bicarbonate or Ammonium Hydrochlorate 5ss., Lard 3ij. Mix.

ASCLEPIAS. *Specific Indications.* — The pulse is strong, the patient has sharp pain in some part, inflammation of serous membranes, skin hot and dry, but not constricted, urine scanty, painful cough.

Dose. — Rx Asclepias 3j. or ij., water 3iv.; a teaspoonful every hour.

Asclepias may be taken as the type of a diaphoretic, acting kindly, and promoting that normal activity, "insensible perspiration." The skin softens, the temperature comes down, the pulse is less frequent, and the nervous system is relieved. It is especially a good remedy in pleuritis or pleuro-pneumonia, and in rheumatism involving synovial membranes.

EUPATORIUM PERF. The Boneset has a direct influence upon the skin, and may be employed to good advantage when the pulse is full and strong, and the skin gives the sensation that perspiration is almost ready to break out. It may be employed alone or in combination with the sedatives.

CROCUS SATIVUS. *Specific Indications.* — The skin is dull, mottled and inactive, afterwards becomes exceedingly dry and harsh, with irritation of mucous membranes. An eruption shows itself beneath the skin, or there has been a retrocession.

Dose. — Saffron may be used in infusion, or the specific may be given with warm water.

True Saffron is one of the most certain, as it is one of the kindliest of diaphoretics, and when it can be obtained it should be employed, especially in the eruptive fevers.

NEPETA CATARIA. *Specific Indications.* — The skin is dry and harsh, mucous membranes of the air passage irritable, urine scanty, more or less pain in abdomen.

Dose. — Catnip may be given in sweetened infusion in irritation of the respiratory and intestinal mucous membranes, or the specific Catnip may be added to water in the proportion of gtt. x. to gtt. xx. in water $\frac{5}{3}$ iv., and given in teaspoonful doses.

It must not be supposed that because Catnip is a common domestic remedy, it is worthless, for it will sometimes answer a better purpose than the stronger and

harsher medicines. Used with the sedatives, it gives excellent results in fevers complicated with irritation of mucous membranes.

SERPENTARIA. *Specific Indications.*—The skin is inactive, harsh, desquamation of epidermis, epidermis feels rough and dead, weight and dragging in the loins, scanty urine, fullness of chest, difficult respiration.

Dose.— $\frac{3}{4}$ j. to ij., water $\frac{3}{4}$ iv.; a teaspoonful every one to three hours.

BELLADONNA. Though a remedy which is studied with especial reference to the nervous system, it also influences the skin directly, and is thus one of our most important remedies. The reader will remember the statement that "it causes contraction of capillary blood-vessels, and thus overcomes congestion." This is its most important action, and this it does in the skin and kidneys, as well as in the brain.

Congestion of the skin is known by the deep coloration, dusky red, or when bright red, and the redness is effaced by pressure, a persistent white line is left. In the eruptive fevers its influence is to bring the eruption to the surface. This is shown in the simpler eruptions—erythema and urticaria, and in the severer eruptive fever—scarlatina.

Dullness of mind and disposition to sleep are almost always associated with congestion of the skin, but in some cases there will be marked impairment of the capillary circulation of the skin before the brain suffers.

RHUS. This remedy exerts a direct influence upon the skin, being indicated by bright redness and burning pain. It is a remedy in urticaria, with burning and itching; in scarlet fever, when the skin is hot, dry and burning; in erysipelas, where there is vivid redness with burning pain.

Of course, we are not altogether guided by symptoms from the skin, though these would be sufficient. The

sharp stroke of pulse, frontal headache, and prominent red papillæ on tip of tongue will be additional indications.

APIS. Apis is indicated by itching of the skin or outlets of the body. It is a most valuable remedy when thus indicated, as in erythema, urticaria, scarlet fever, prurigo, erysipelas, and some cases of eczema.

Apis has a direct influence upon the skin, and is a valuable remedy in inflammation of the subcutaneous structures, with tensive, lancinating pains and irritation of the skin.

CALCIUM SULPHIDE. *Specific Indications.*—A tendency to the formation of pus. Furuncles, pustular eruptions, cacoplastic deposits.

Dose.—One-twentieth to one-tenth grain three or four times a day.

Calcium Sulphide influences the glandular system, the blood, and the skin. It is one of our best remedies in diseases of the skin.

It is valuable in furunculosis, impetigo, some forms of eczema, and in fact in any skin disease which shows a tendency to the formation of pus.

ARSENIC. *Specific Indications.*—Inactive skin, wants elasticity; dull, sallow, or pallid color; eczematous eruption; feeble circulation.

Dose.—For children, in ordinary cases, I prefer a second or third decimal dilution; though I sometimes use the pellets wetted with Fowler's Solution. In skin disease, where a stronger action is wanted, we prescribe: B Fowler's Solution gtt. xxx. to 5j., water $\frac{3}{4}$ iv.; a teaspoonful every four hours, or three times a day.

Arsenic is indicated in low or impoverished conditions of the blood, when there is impaired nutrition, with a tendency to tuberculous and caseous formation and tissue degeneration.

It has been much abused in skin diseases, owing to an indiscriminate use in all varieties. It is of use only in chronic skin troubles; those characterized by a dry and scaly condition, such as psoriasis, and not those with a proliferation of new cells and exudation of serum. It therefore seems best confined to diseases affecting the epidermal structures.

In malarial affections, its usefulness is confined to the irregular, chronic cases, not the acute, sharply defined ones.

The indications in all these cases are the same: the muddy, dirty appearance of the skin, with inelasticity.

ANTISEPTICS.

We will embrace in this group those agents which destroy septic poisons, and arrest the processes of sepsis outside of the body.

In medicine, cleanliness takes precedence of godliness, and many times the need of antiseptics may be prevented by strict attention to cleanliness. There is an intimate relation between "dirt and disease," especially if the dirt is the waste of the human body, or that which it subsists upon. Soap and water will stand first in the list of antiseptics.

Good air is a requisite of good life, and many germs of disease overtake people and gain entrance to their bodies through bad air. The air is defiled in many ways, and all these should be thought of and avoided. The sick should have their supply from such sources as will give it as pure as possible. Whilst air is admitted to the room, from without, provision should be made for the egress of the air that has been used. An open fireplace, with a fire, is the best means of ventilation in ordinary houses.

Fecal matter is especially poisonous in zymotic disease, and should be removed from the room at once, and the vessels thoroughly cleansed and disinfected. When

removed, care should be taken that it is not emptied where it will defile the water supply, either by running into the well, or into some stream which supplies other persons.

We will study the following antiseptics:

Thymol,	Chloride of Lime,
Carbolic Acid,	Formaldehyde,
Iron Sulphate,	Potassium Permanganate,
Sulphurous Acid,	Liquor Soda Chlorinatae.

THYMOL. Thymol, in weak solution in Alcohol and water, is used as an antiseptic dressing to wounds and in surgical operations, or to abscesses when they are discharging. Thymol may also be used to disinfect the chamber utensils, and dressings for wounds. In some cases the object is to prevent infection by septic germs; in others it is to arrest putrescence in a feeble part. It may be used of the strength of: Rx Thymol grs. ij. to grs. iv., Alcohol $\frac{3}{4}$ ss., water $\frac{3}{4}$ ijss.

CARBOLIC ACID. Carbolic Acid may sometimes be used with advantage to arrest the process of sepsis in injuries and surgical operations, and as an excitant to feeble parts. Usually we prescribe: Rx Carbolic Acid $\frac{3}{4}$ j., Glycerine $\frac{3}{4}$ j., water $\frac{3}{4}$ v. Mix. In this strength Carbolic Acid is an excellent dressing for burns and scalds.

We employ this acid in full strength to destroy warts, working it down to the base of the growth with a pine pencil. It causes suppuration, and in this the growth is permanently removed. It may be also used as a disinfectant.

IRON SULPHATE. Iron Sulphate in solution is a fair disinfectant for privies, drains, water closets, chamber utensils, etc., though it is not as good as the other named.

SULPHUROUS ACID. This remedy is a most excellent antiseptic; bowels may be cleared with it, a diseased sur-

face sponged with it, dressing thoroughly disinfected with it, and finally, if used with a spray apparatus, the air may be disinfected.

The burning of sulphur in a room answers an excellent purpose as a disinfectant and deodorizer.

CHLORIDE OF LIME. I like the old antiseptic, Chloride of Lime, quite as well as any for the disinfection of water closets, drains, sewers, and privies, and sometimes to purify the air of rooms. This agent should be fresh, and as it is put up in pound and half-pound cans, it can be procured and used full strength. For use in the house it may be placed in a saucer and sprinkled with vinegar.

LIQUOR SODÆ CHLORINATÆ. The official solution of Chlorinated Soda is a valuable disinfectant and antiseptic. It is especially useful to cleanse vessels, surgical dressings and bandages, water closets, drains and sewers; used with an atomizer or spray apparatus, it will purify the air of a room and destroy disease germs. In severe diphtheria, in scarlatina maligna, and smallpox, its frequent use is of advantage to the patient, and prevents the spread of the contagion.

FORMALDEHYDE. The use of Formaldehyde Gas promises to supplant other methods of disinfection. The gas is generated by the oxidation of Methyl or Wood Alcohol in a specially made lamp, of which there are many makes upon the market. The advantages claimed for it are its penetrating properties, it penetrating every space open to atmospheric air, without injury to colored fabrics. It possesses strong germicidal as well as disinfectant properties.

A one per cent. solution of Formic Aldehyde is claimed to be serviceable as a surgical dressing, whilst the concentrated Formaldehyde solution can be used for the cauterization of old sores.

The safety, cheapness, and convenience of Formaldehyde commend it as a disinfectant.

POTASSIUM PERMANGANATE. We rarely employ the Permanganates internally on account of their irritant action upon the stomach. But as a local application to arrest the septic process, and to prevent rapid destruction of tissue, it has no superior. It is used in superficial and phlegmonous erysipelas, suppurative skin diseases, in the treatment of superficial inflammations when parts manifest debility, in the treatment of abscesses, and other suppurations the result of inflammation, and the treatment of wounds and injuries. The solution for external use will be made in the proportion of from one-half to one drachm of the salt to one pint of water. When the tissues are greatly debilitated it may be used as strong as ten grains to the ounce of water.

ANTI-RHEUMATICS.

We have a peculiar inflammatory process which we call rheumatic, and a variety of pain which we also call rheumatic, and both of these are due to a special cause. Not only have we rheumatic inflammation and rheumatic pain, but we frequently find the rheumatic cause influencing other diseases. What this cause is, is not accurately known. It has been thought to be *lactic acid* generated during retrograde metamorphosis, or by decomposition or maldigestion of food. Whether lactic acid or not, it is certainly a product of retrograde metamorphosis or food decomposition. Whatever it is, however, it is specific in its nature, and is met by specific remedies.

The group of anti-rheumatics will be as follows:

Macrotyls,	Sticta,	Salicylic Acid,
Bryonia,	Apocynum,	Alkalies.
Phytolacca,	Acids,	

MACROTYS. *Specific Indications.*—Muscular pain, pain is intermittent, as if due to muscular contraction, parts swollen tense, pain somewhat throbbing (no evidence of suppuration), pains in inguinal region and groins, lumbar pains.

Dose.—℞ Macrolys gtt. xxx. to ʒij., water ʒiv.; a teaspoonful every one to three hours.

With the indications as above named, Macrolys is a very certain anti-rheumatic. As there is fever and inflammation, we usually associate it with the Veratrum. In some seasons it seems to be indicated in almost every case of rheumatism or rheumatic pain, so that we are inclined to think that it will cure every case, and possibly the next year the disease has so changed that it will relieve none.

BRYONIA. This remedy has been fully studied, and we notice it here only as it influences rheumatism. The indications are *sharp* pain, the serous membranes are involved, the pain is tensive, and the pulse full and hard.

APOCYNUM. Apocynum was studied under the head of remedies which influence the circulation. The indications for it in rheumatism and rheumatic pains are: œdema of feet, eyelids or other part, and puffiness or œdema of part affected.

SALICYLIC ACID. *Specific Indications.*—The tongue is full, leaden-colored or purplish, the temperature high, but without dryness of the skin; the breath is sometimes fetid; the tongue is broad, with leaden pallor.

Dose.—The best form to administer Salicylic Acid to children is as a Potassium Salicylate, say: ℥ Salicylic Acid grs. x. to grs. xx., Potassium Acetate ʒss., water ʒiv.; dose, half teaspoonful to one teaspoonful every two or three hours.

Where the case is properly selected, Salicylic Acid lowers the temperature, controls the circulation, and the specific

gravity of the urine is markedly increased. But when not indicated it irritates the nervous system.

PHYTOLACCA. This remedy, studied under the head of anti-zymotics, is also an anti-rheumatic, if the indications for it are present: Pale tongue, sore mouth, vesicular eruption on tongue and about the mouth, enlargement of lymphatic glands.

STICTA. Sticta Pulmonaria, studied under the head of remedies that influence the respiratory apparatus, is a most excellent anti-rheumatic, if the following symptoms present: The neck is stiff and painful, the head drawn back or to one side, pain in shoulders, extending to neck and occiput.

ACIDS. If one has read the medical journals of the past twenty-five years, he will be surprised at what seems to be a fashion in the selection of remedies. For months the medical journals will teem with articles in favor of acids in the treatment of rheumatism, and reports of cures; and then it all seems to change, and alkaline salts are just as strongly recommended, and quite as many cases reported. It is all rheumatism, and nothing is said about a difference of cases, and we might suppose it was all chance. Yet the cases cured by acids could not be reached by alkalies, and *vice versa*.

We have no doubt of the cures in both cases, for it is a fact that acids will relieve rheumatism, as it is equally the fact that the cause of rheumatism may be antagonized by alkalies. But these are not the same conditions of disease.

Lemon juice is anti-rheumatic when the tongue is markedly red, and the papillæ prominent; the coating of the tongue is usually thin and white.

ALKALINE SALTS. If the tongue is broad and *pallid*, we use an alkaline salt, and sometimes it is all that we require

to cure any rheumatism. It is usually Sodium Bicarbonate to the extent of one-half to one drachm daily for children two years old. If the tongue has a leaden pallor, Potassium Nitrate or Acetate is the better remedy.

ANTIPERIODICS.

If physicians will not concede anything else, they will concede that the group of remedies called antiperiodic, and Quinine especially, has specific action. They will go further, when pressed, and admit a well-defined and positive indication for this group of remedies. Pushed a little further, and they will admit the certainty of its action when thus clearly indicated.

This is what we claim with reference to all remedies which have been carefully studied, and we believe that any one may satisfy himself that we live in a world of law, medically as well as physically, the same causes always producing the same effects.

The indication for the antiperiodics — periodicity of disease — is so clearly defined in many cases that he who runs may read. There are exacerbations of the disease, whatever it may be, and there are remissions or intermissions in it.

Whilst physicians will admit the positive action of antiperiodics in malarial disease, and claim that they are as nearly "specifics" as anything we have in the *Materia Medica*, they will yet confess to a great many failures. These failures prove to them that "there is no certainty in medicine."

Here the diagnosis has been half made. In the one case the periodic cause, whatever it may be, was the basis of the disease; in the other case it was but a part, and there was something else at the bottom. There are many cases in which the antiperiodic can not act, because of some morbid conditions of the body; correct these wrongs, and

at once it acts kindly. Proper preparation for the action of the antiperiodic is many times essential to its success.

The remedies we will study in this connection are:

Quinine Sulph.,	Arsenic,	Alstonia Constricta,
Cinchonidine,	Uvedalia,	Nitric Acid.

QUININE SULPHAS. *Specific Indications.* — There is distinct periodicity in the disease, whatever else may be its character, the periodicity being marked by exacerbations and remissions, or intermissions.

Dose. — In the ordinary use of the remedy, the anti-periodic quantity will be one grain for the first year, two grains for the second, and so increase one grain each year up to the fifth or sixth, when the dose will vary according to the strength and development of the person. In some cases very minute doses prove antiperiodic; in others its limited absorption by the skin when used as an inunction, or applied to the skin with Alcohol, is sufficient.

Periodicity being the indication, we want to know if the patient is in such condition that the remedy will act, and will act kindly. In this case, as in many others, a remedy must gain entrance to the blood before it can antagonize the disease. We put it in the stomach in an insoluble form — the stomach must first furnish an acid menstruum for its solution, and then reverse the process of osmosis to cause its absorption. If either of these fail, the agent will not prove curative.

Again, the remedy acts kindly in a certain condition of body, unkindly in other conditions, and a knowledge of these is essential to its right use. We say that if the pulse is soft, the skin soft, inclined to moisture, the tongue moist and cleaning, and the nervous system free from irritation, Quinine will act kindly, and if there is periodicity, will arrest the disease. On the contrary, if the pulse is frequent and hard, the skin dry and constricted, the tongue dry, and the

nervous system excited, it will do the patient harm. It is true that in some severe periodic diseases Quinine will lessen the frequency of the pulse, bring down the temperature, control irritation of the nervous system, and start secretion, but this is an exception to the general rule.

In many cases of marked periodic disease, we first prepare the patient for the kindly action of the remedy, and then administer it. The child has its Aconite or Veratrum to control the circulation, baths to influence the temperature, Gelsemium, Rhus, Belladonna, or whatever may be needed, to relieve the nervous system, and sometimes means to promote secretion.

The use of Quinine by inunction is an important means in the treatment of children. In many cases of distinct malarial disease the remedy seems to be quite as efficient an antiperiodic as if given by mouth. In nervous persons, and when the remedy unpleasantly influences the nervous system, it does much better. In obscure periodic disease, and when the nervous system requires stimulation, it will be found an excellent method of treatment.

Whilst I regard Quinine as a most valuable remedy, in its place, I insist on the indication, *periodicity*, for its administration. It will not cure continued or typhoid fever; it never has arrested a case, and never will, but it has done an immense amount of harm, intensifying the disease, increasing the suffering, and prolonging the duration.

CINCHONIDINE (Cinchonidia) possesses the same properties as Quinine, and has the same indications. It is claimed that it is better tolerated by the stomach, and is more easily taken by children. The dose will be the same.

ALSTONIA CONSTRICTA. *Specific Indications.* — The disease is periodic, having exacerbations and remissions, or intermissions; the skin is dirty or tawny, the tongue dirty, and the urine is turbid and deposits a cloudy sediment.

Dose. — The dose of Alstonia will be somewhat less than of Quinine — say, one grain the first and second year, and then an increase of half a grain a year.

Whilst the Alstonia is not so certain an antiperiodic as Quinine and the other alkaloids of the Cinchona barks, it stands next to these, and will meet cases where they have failed. If the reader will notice the indications — a dirty, tawny skin, a dirty tongue and mouth, atonic fullness of spleen and liver — he will see that it reaches very unpleasant cases. When it fits the case, it is much more likely to effect a radical cure, in ague, than Quinine.

It is especially useful in the chills and periodicity frequently met with in tuberculosis, being much more efficient than Quinine. In such cases it not only allays the chills, but acts as a restorative as well.

ARSENIC. *Specific Indications.* — The pulse is soft and feeble; skin inelastic, pallid or dirty; tongue pallid and expressionless; eyes dull; tendency to hemorrhage; periodicity in disease.

Dose. — We generally employ Fowler's Solution, adding from one to five drops to four ounces of water, and giving a teaspoonful four times a day. Sometimes pellets wetted with Fowler's Solution answer a good purpose, and we occasionally use the third to a sixth decimal trituration.

We have made a study of this remedy under the head of remedies that influence the skin, and need only notice it here as it is antiperiodic and restorative. As a rule, we do not employ it in acute ague, or when Quinine will cure; it is the old and hard cases, and when other remedies have failed. There is impairment of the vital forces, and marked by the indications given above, we use it as a vital stimulant.

NITRIC ACID. *Specific Indications.* — The tongue has a violet color, showing the ordinary redness beneath; some-

times the lips and finger nails will also show this violet coloration.

Dose. — B Nitric Acid gtt. x., water and syrup aa. $\frac{5}{j}$; one-half to one teaspoonful every three hours.

As an antiperiodic it is principally used in chronic ague, though we find cases where it will break the paroxysms and cure the acute. The ordinary remedies have been used without success. If now we find the violet coloration of tongue, we may be pretty sure of a cure with this.

It is a remedy for any form of disease when this indication is present. Thus, in indigestion and intestinal dyspepsia, we frequently find this is the remedy indicated. In summer diarrhoea of children, when the discharges are green, it acts as a tonic as well as an astringent. In chronic diarrhoea, associated with lientery, we have found it successful, when the stools were yellowish-white and sour-smelling.

It will influence the appetite, digestion and blood-making, give a better circulation of blood, and improved waste and excretion; therefore we use it in some cases of syphilis, chronic skin diseases, and other blood lesions. It is one of the remedies recommended for whooping cough, and if the indication is present, it is very prompt in its action. It is also a very good remedy in chronic bronchitis and some cases of phthisis.

POLYMNIA UVEDALIA. *Specific Indications.* — Enlargement of the spleen (ague cake), abdomen full and doughy, fullness in hypochondria, enlargement or hypertrophy of any part, if the tissue is atonic, doughy and inelastic.

Dose. — For internal administration the dose will vary from the fraction of a drop to five drops. The common use is as a local application, an ointment of Uvedalia being employed. In ague cake and asthenic inflammations, this ointment is rubbed on and toasted in with a hot iron. It

is equally as efficacious in chronic hepatitis or enlargement of the liver, from whatever cause, when used in this same manner.

This remedy is not properly an antiperiodic except as it influences the spleen, and, by restoring it to a normal condition, removes the cause of the continuance of the ague. For this purpose it has no equal. In hypertrophy and inflammatory engorgements of parts, when there is marked atony, it has proven a useful remedy.

PART II.

CARE AND MANAGEMENT OF INFANTS.

CHAPTER III.

THE young of man is the most helpless of all created beings, requiring constant care from the hour of birth until its second or third year. But it is especially for a short time after birth that it is thought to need extra attention, when it very frequently gets an officious interference that renders it uncomfortable, and frequently leads to disease.

Many of the prejudices and whims of the olden time still remain, and some of them, indeed, receive the tacit support of the physician. It is well to educate the public mind to the truth in these things, and though the physician may find it a thankless task at first, it will bring its return in an increased confidence and respect.

Works on obstetrics point out the things to be done, and how to do them. It will be our business here, at least to some extent, to point out some things that should not be done, and other things that are not done properly.

WASHING THE CHILD.—A physician should not have the least hesitation in telling a nurse how to wash the child, if she shows ignorance in regard to it.

The child should be thoroughly anointed with lard, and then with a piece of soft flannel, or even cotton, wipe the

child clean. This removes the sebaceous material. Then with soap and water, and a *soft* cloth or sponge, it may be gently yet thoroughly washed, beginning with the face, particular attention being paid to the cleanliness of the eyes. The drying had better be done by gently pressing the towel or cloth upon the skin, rather than by rubbing. This makes all the difference possible in the feelings of the child and its future comfort. And as the skin has a very close sympathy with other parts, in addition to being an extremely sensitive part itself, we can readily see that, in some cases at least, it will be a means of avoiding serious disease.

CLOTHING OF THE CHILD.—I object most decidedly to many parts of the infant's dress, as usually made; and I have no hesitation in giving my objections words, whenever and wherever I am brought into contact with these errors. Two things are essential: warmth and looseness.

The *bandage* of the child is *always* pinned too tightly. The child no more needs this swathing than the adult; its abdominal muscles are just as strong, and just as capable of performing their functions. But there is something worse than the mere suffering which follows such confinement. The bandage extends upward so as at least to embrace the floating ribs, hence the insertion of the diaphragm, and often much higher. Here there is a more or less serious impairment of the respiratory function, as the band is more or less tightly applied. We not only have suffering and restlessness upon the part of the child from this, but occasionally such impairment of the lungs as will lead to a fatal result.

There is another lesion that may be directly attributed to this. I allude to infantile *constipation*. It comes on gradually; it is attended with colic, and sometimes with infantile dyspepsia. True, in many cases it does not produce any present marked inconveniences, but it lays the

foundation for future constipation, hemorrhoids, prolapsus ani, and hernia.

The child needs such band only for the purpose of retaining the dressings of the cord, and to give warmth. One thickness of soft and elastic flannel, not so wide as to extend upward on the thorax, or down to be wet with the excretions, will answer this purpose. Being elastic, it maintains its place without being applied tightly.

Its skirts are usually badly made. The waist is made of cotton stuff, usually stiff and harsh, and so wide as to prevent any warmth from the flannel attachment. As frequently put on it chafes the child under the arms, and is unpleasantly bulky and cumbersome about the body.

The diaper is as bad or worse than the other garments. If the parents are in good circumstances, and it is a first child, it will be a linen diaper; at any rate it will be harsher than there is any need for. Let this be wetted and dried several times without washing, and we have a cause of irritation. I have seen scores of cases in which irritation and chafing about the genitals, the perineum, nates, and thighs, was the result of such treatment.

While I do not insist that the diapers should be washed after each discharge of urine, though it would be better and pleasanter for the child if they were, I object to their being used until they smell and are as foul as it is possible for so much linen or cotton to get. If children are delicate, the absorption of these excretions must prove very detrimental.

When a child shows such irritation as I have named, recommend that the diapers be made of canton flannel, which is soft, unirritating and pleasant, and that they be rinsed in clean water every time they are soiled, before drying and using.

HOW OFTEN SHOULD THE CHILD BE WASHED?—The question is pertinent, but requires some inquiry as to the condition of the child, as regards robustness and health.

A healthy babe should have a daily bath, in order that the pores of the tender skin be kept open and healthy. When very young a sponge bath is sufficient.

To wash such a child properly, the nurse should have a blanket or other woolen material of sufficient size to wrap the child entirely up. Then a portion of the body should be washed at a time, the child being kept well covered in the meanwhile. As the child grows older a tub is used. The nurse should then be prepared with some soft woolen material to wrap the child in, as soon as it is taken from the tub. It is then dried tenderly and carefully, and placed in bed.

When the child is delicate and nervous and shows a poor reaction from the bath, as indicated by a bluish cast about the mouth and eyes, care should be taken that the room and water be not too cool. It is better that a sponge bath be given these little ones.

With some irritable, sleepless children, we have seen excellent results follow a sponge bath given at bed time. It seems to quiet and soothe the nervous system, and thus induces sleep. The addition of sodium bicarbonate, or common salt, enhances the value of the bath as a sedative influence.

Some children have an inordinate dread of water. No rough usage is necessary to overcome this repugnance. With them tact and delicacy are required. A toy in the water, or even a floating cake of soap, helps to attain the desired end.

ATTENTION TO THE CORD.—The question is usually asked, How long will it be before the cord falls off? and what shall we do with it in the meantime? It usually requires from five to nine days for the separation of the cord, and cicatrization of the umbilicus, and occasionally it is prolonged beyond this.

It is important that the cord be tied sufficiently tight to prevent any hemorrhage. True, it is but rare that there

is any severe hemorrhage, yet I have had such in my practice. But a small amount of blood discharged causes the cord to adhere to the cloth, and the mass becomes hard, unpleasant, and irritant to the child.

The cloth or cotton with which the cord is dressed should have its upper surface oiled, so that it may not adhere if it should become necessary to remove it. Every day, when the child is dressed, it should be placed in such a position that there will be no strain upon the cord. And in washing the child, the cord and cloth should be removed, so as to wash beneath it.

In the majority of cases, irritation and inflammation about the umbilicus is the result of tension upon the cord, the dressing becoming hard and irritant from bleeding, from a too tight band, or from the excretions passing up so as to soil the dressings of the cord, and consequent want of cleanliness.

No traction or other means should be used to remove the cord, as it will be separated in due time by the natural process.

When the cord has been separated it is well to apply a soft cotton cloth, folded, that the recent cicatrix may not be disturbed by the rubbing of the child's clothes. If the part seems somewhat tender, a cloth spread with mutton suet or simple cerate may be applied.

ULCERATION OF THE UMBILICUS. — Occasionally we are called to prescribe for ulceration, or rather a want of cicatrization of the umbilicus. Sometimes there is considerable redness and evidences of inflammatory action, and the child is feverish and fretful.

I generally prescribe one of three things. In the majority of cases, that the part be powdered with lycopodium twice daily, if there is much inflammation. Or, if there is an erysipelatous redness, that it be dressed with an oxide of zinc or glycerate of starch ointment. If the

child is feverish and restless, we would give Aconite, one drop to the ounce of water, one-half of a teaspoonful every hour.

EXCORIATION AND CHAFING.—Various parts of the infant's body may be chafed, and become excoriated, and painful. I have already mentioned the chafing that comes from want of attention to the diapers of the child, and want of cleanliness. It is quite easy, by inspection, to determine the nature of the difficulty, but it is not always so easy to give immediate relief.

The use of Asepsin or some equally good soap to wash the child, and strict attention to cleanliness, will sometimes be all that is necessary. The skin of the child is delicate, and the excoriations, intertrigo or chafings are caused by moisture and heat. The prevailing custom of using ointment in such cases is erroneous, and frequently but adds fuel to the fire. The first essential is cleanliness — not to be obtained by strong soap and abundance of water applied to the child, but rather to the diapers, which should be frequently changed.

This attended to, some bland absorbent powder frequently dusted over the part will do the rest. We prefer Lycopodium, as it will not cake, no matter what the amount of moisture present. Starch, talcum, stearate of zinc and subnitrate of bismuth have all been used with more or less success.

DOES THE CHILD NEED MEDICINES IMMEDIATELY AFTER BIRTH?—Many persons believe that the young child needs something to act upon its bowels.

The truth is, the less the child is interfered with, the better it will get along. Nature makes provision for all its wants, and an action of the bowels is provided for in the first milk of the mother, and it will be good policy to impress this upon the mother and nurse.

There is no need of saffron tea to keep off the jaundice, or make the child a better color; no need of German chamomile to strengthen its stomach. What it wants is warmth and quiet, not food or medicine. Nature furnishes food at the proper time, and furnishes it exactly adapted to the wants of the child.

DIFFICULTIES IN NURSING THE CHILD.—Occasionally we find a child that will not nurse; at least it persistently refuses, and accompanies its refusal by energetic remonstrances.

If the child is fed, the difficulty increases as time progresses; for, becoming accustomed to the spoon or bottle, he is less inclined to take the breast. The proper way is, not to feed the child, but, by kindness and perseverance, get it to nurse. The child should be applied to the breast when in a good humor, and not when crying; sometimes it will be an advantage to wet the nipple with the milk, as an extra inducement.

In some cases the difficulty is with the mother, not with the child. The nipples are retracted, or not properly formed, and the child is unable to obtain a sufficient hold to draw the milk. In this case a breast pump, or a nipple shield, will draw the nipple out so that the child can nurse. If these are not at hand, it may be accomplished with an ordinary pint bottle; fill it with hot water, and pouring it out quickly, apply to the breast. The sore nipple that is so frequently encountered, and that proves such an annoyance and source of difficulty in nursing, demands immediate attention, for if neglected, it is often the exciting cause of a mastitis. Order at once a nipple shield, as a protection to the tender structure, and apply to the fissured nipples Liq. Plumbi Subacetatis, Echafolta or Phytolacca. The first, if there be simply a fissured, tender nipple; the second, if there be any infection of the fissures; the third, if there be any tendency toward a mastitis. Small doses

of Phytolacca with or without Aconite should be given in connection with this local treatment.

If a nipple shield can not be readily obtained, one can be fashioned from an ordinary piece of sheet-lead, or in an emergency even from beeswax.

FOOD OF THE CHILD.—The natural food of the child for the first six months is the mother's milk, and it is rarely the case, when the mother is healthy, that any other food will be required.

When from any cause the mother is unable to provide the necessary nourishment for the child, we are compelled to furnish a substitute for the food intended by Nature.

It is imperative that the substitute should contain as nearly as possible the same constituents as the mother's milk, and that these constituents should be in as nearly the same proportion as possible in such milk. The large number of "Infant Foods" upon the market is sufficient evidence that infant feeding has by no means reached the acme of certainty, but we believe that, excepting the "wet nurse," cow's milk properly modified offers us the best substitute for the mother's own milk. The composition of cow's milk and human milk is given by Holt in "Diseases of Infancy and Childhood," as follows:

	Human.	Cow.
Fat	4.00	3.50
Sugar	7.00	4.30
Proteids	1.50	4.00
Salts20	.70
Water	87.30	87.50
	100.00	100.00

Reaction.—Human, neutral or alkaline; cow, acid or neutral, never alkaline

It will be observed from the above analysis that, though the total solids are about the same, the individual constituents vary considerably. In the human milk there is

nearly twice as much sugar as in cow's milk, a larger percentage of fat, and only about one-third as much proteids. The proteids in cow's milk consist principally of casein, which coagulates into large, firm clots, and is the cause of most of the difficulty to the digestion of cow's milk by infants. To fulfill the requirements necessary to provide a suitable and digestible food, many formulæ for the modification of cow's milk have been proposed. In fact, nearly all writers on Pædiatrics have offered us one or more of them. We have found the best method to be the modification of the milk so as to bring the constituents as near as possible in the same proportion as in human milk. Watch the effects, and change from time to time, as necessity may require.

The best method of reducing the percentage of proteids is by dilution with water. Ordinarily we dilute the milk twice; or, in other words, we commence by using two parts water and one part milk, which dilution reduces the percentage of proteids from 4.00 to 1.33, which closely approximates to that of human milk. If this dilution does not seem sufficient, as evidenced by the passage of firm curds, the proteids may be further diminished by the addition of more water.

The sugar is increased by the addition of milk sugar. If necessity compels, cane sugar may be substituted. The addition of sugar is not for the purpose of sweetening the milk, but to increase the amount of soluble carbohydrates, which, from the analysis quoted above, is shown to be nearly as much again in human milk as in cow's milk. Rotch advises that we use three and three-eighth drachms of milk sugar to a pint of food. To render it alkaline in reaction, a half ounce of lime water is added to a pint of the mixture.

At times an increase of the sugar is demanded by an evident lack of growth. While an obstinate constipation

may often be cured by increasing the amount of fats by the addition of cream, caution should be exercised not to add too much fat, as would be shown by the passage of small lumps of fat from the bowels, or by the frequent regurgitation of food an hour or two after feeding. It is necessary that the milk be freshly prepared each time the child is fed; if allowed to stand, there is danger of it becoming curded.

The fresh milk should be secured twice daily, if possible, and the entire quantity to be used for the ensuing twelve hours sterilized at once. It should be then securely corked or sealed in a clean vessel and kept cold, and the necessary quantity freshly prepared for each feeding by the addition of the water, sugar and lime water.

A method in vogue by some physicians is the dilution of cream. It must be remembered, however, that cream contains a very large percentage of fat, with but little change in the other constituents from whole milk. The proper proportions are then obtained by diluting with sugar water.

As a substitute for mother's milk, and to assist the physician in his work, we have upon the market a large number of "infant foods." It is not necessary that the physician should know all about these foods, but he should at least have some knowledge of them, that he may intelligently advise his patients. For purposes of study, Holt has classed them as milk, malted, farinaceous and miscellaneous foods. In the first class are included Nestle's and the Anglo-Swiss foods. In the second are Melin's, Horlick's, and Liebig's. In the third, Imperial Granum, Ridge's, and Hubbell's. The fourth contains those which can not be classed in either of the other divisions, and includes such foods as Carnick's Soluble Food, lacto-preparata and lactated food.

Whilst all these are claimed to represent an ideal food for the infant, the fact remains that, after all, the basis is cow's

milk modified by the addition of some substance, usually the cereals. As a consequence, they introduce for digestion a substance foreign to mother's milk, usually starch, although in certain foods the starch, by predigestion, is converted into dextrines, which is more easily digested.

It is an established fact that the function of converting starch into sugar by the digestive organs of the infant is in process of development for the first ten or twelve months. It is, therefore, only rational to suppose that it should not be overtaxed to perform a work uncalled for by nature. These foods call for dilution before they can be used, with water or milk, or both. Analysts tell us that this dilution renders the percentage of fat too low, and, in many instances, that of sugar also. Manufacturers supply the deficiency of sugar by the dextrines, or glucose.

Condensed milk, which is so frequently used, contains, when undiluted, a large amount of cane sugar. We have seen fat babies raised on this, but they were pale, flabby, and lacked vitality.

We have used some of these foods to tide over a critical period now and then, and in cases of extremely irritable stomachs. Our experience teaches us that, save isolated cases, they are unfit food for an infant. Sooner or later a lack of nutrition and growth calls for a change, which must be satisfied. My own experience teaches me that nothing but a properly modified cow's milk satisfies this demand.

In the selection of the feeding bottle and nipple, the simplest and easiest cleaned is always the best. Those with the long tube are the most convenient for the nurse, as the bottle can be prepared and the child placed in its crib, and left to care for itself; but the use of it should not be encouraged, owing to the difficulty with which they are cleaned.

The cylindrical, graduated bottle, with the plain, rubber

nipple, that slips over the neck of the bottle, is the best, as it is easily cleaned. The bottle should be boiled each day, and, when not in use, kept in a solution of borax, boracic acid, or sodium bicarbonate. We prefer the latter. The nipple should be brushed and washed both inside and out. Especial care should be observed at night that no tainted milk be given the babe.

At the end of the first year milk alone ceases to be satisfactory, and the dietary must be enlarged. The time of change varies somewhat, according to the robustness of the child. The popular belief is that with the irruption of the central incisors, the time has arrived for supplementary feeding. Farinaceous foods, such as some of the many cereals upon the market, have proven satisfactory. Meat broths and some fruit can be allowed. Whole milk, however, still continues to be the chief article of diet.

A matter of nearly as much importance as a proper diet is that of regularity in feeding. The popular notion that every time a child cries it must be fed, is fraught with danger to the child. Overloading the stomach soon causes indigestion and consequent ailments. Frequently a little cold water will answer the purpose better. It is a mistake to withhold cold water from a child, as is so frequently done. It should be given daily. A child should not be allowed to sleep with the mother, for by so doing it frequently nurses too much. Two or three nursings during the night in the earlier months are amply sufficient, and by the time the child is six months old once during the night should suffice.

A WET NURSE.—Next to the mother's milk as food for the child, the milk of another woman is the best. Yet the selection of a proper person for a wet nurse is surrounded with many difficulties. Artificial feeding has also been carried to such a degree of perfection that the use of the wet nurse has, to a large degree, been supplanted.

Mothers have a prejudice to overcome in agreeing to this; yet in some instances it is manifestly for the child's benefit; and, provided the proper person can be secured, the chances for the child living are greatly enhanced.

The selection of the nurse is attended with many questions of moment. She must be selected with reference to her health, the age of her milk, her ability to provide for the additional charge placed upon her, and with reference to her moral character and associations. She must, first of all, be examined as to her health. She should be free from all tubercular or syphilitic taint. The general appearance of the applicant will usually tell the story at the first glance. It is better that a careful examination be made, and any enlarged glands or old cicatrices noted. They tell the story of tainted system.

What we are most fearful of is a syphilitic taint — secondary syphilis. We may not be able always to determine this, for it may exist in the system without having as yet shown itself by the usual symptoms. A person suffering from secondary syphilis in the early stage will show maculae, and if the tongue is examined we will find the evidence in recent or old indurations.* On the other hand, an infected child should not be given to a healthy nurse.

Pregnancy, and in many cases even menstruation, so alters the milk that a woman should be debarred as a nurse, unless it can be shown that her milk during such a time undergoes no material change.

The moral character should be good. A nurse addicted to intemperance not only vitiates her milk, but she is not to be trusted, and may expose the child to injury. If intemperate, she would probably be dissolute, and at times

*An examination of the child of the applicant might lead to the clearing up of a doubtful case.

of a vicious temper. The evils can not be transmitted through the milk, but the nurse, through her intimate association with the child, may leave a lasting impress upon the latter.

The breasts should be examined as to the capacity to furnish a sufficient supply of milk for the child. A large, pendulous breast may be composed principally of adipose tissue, and contain but little glandular tissue. If round and firm, of usual size, and a well-developed nipple, there will be but little doubt in this respect. We may satisfy ourselves on this point by noting the difference in size before and after nursing, as well as the conduct of the child during and following nursing. It is important that the nipple be free from sores or abrasions, as these not only prevent free nursing, but it is the source from which vices of constitution are most frequently transmitted.

WEANING THE CHILD.—The popular notion that a child should be weaned at twelve months is an error. The period for weaning depends upon certain conditions in both mother and child. Circumstances may demand that the child be weaned at as early a period as the fifth or sixth month, and, again, nursing may be prolonged beyond the twelfth. We are satisfied that many children are deprived of the breast from insufficient reasons. If a child is well developed, and has cut its teeth thus far without trouble, there is no reason, so far as it is concerned, why it should not be weaned. Of course, it is essential that for a couple of months it has been accustomed to eating, and has digested its food well. I do not think weaning is prudent until we have the conditions named, unless the mother's condition demands it.

Among the causes in the mother that often call for weaning is the reappearance of the menses. It has been clinically ascertained that during the menstrual period

changes take place in the milk that produce irritability of the gastro-intestinal canal and of the nervous system. When such a condition exists, rather than to have a repetition of these disorders every month, we would advise weaning, resorting to the cow's milk. We have met this condition when the child was but four or five months old. It is the popular impression, and to some extent it is true, that so long as a woman nurses her child, she will not have her menstrual periods, and so long she will not be in danger of becoming pregnant. Frequent pregnancies are a very great burden to a woman, as is prolonged lactation. Our own experience has taught us that, in some instances at least, this notion is erroneous. We have met cases where no menstrual show intervened between three successive pregnancies, though lactation did not cease. We deprecate, under all circumstances, prolonged nursing. It is good neither for the mother nor for the child. Acute diseases in the mother, such as typhoid, pneumonia, any of the exanthemata, or acute inflammation of the breast, usually necessitate sudden weaning. In many of the minor acute diseases the mother frequently nurses the child throughout without any apparent trouble. It is better, however, that the flow of milk be retained by means of the breast pump, and the child artificially fed for the time.*

It is better to prolong nursing a month or two during the heated season, and to wean in the cooler portions of the year, unless necessity compels us to act otherwise.

We believe that gradual weaning is better for both mother and child. Sudden weaning is usually followed by an attack of indigestion, and should not be encouraged,

* The considerations with reference to the child are as to its health, and its powers of digestion and assimilation in maintaining a separate existence. This is in a measure indicated by its growth and the irruption of the temporary teeth; also by the condition of the child, as to recovery from acute illness, and the condition of the weather.

except when the condition of the mother or child necessitates it, as in an acute illness.

Our plan has been, when the child has reached a suitable age, say from six to nine months, being guided by its development, to begin giving it a mixed diet, carefully regulating it, so as to give only such articles as are suited to its age. We also teach it to drink milk from a glass, and as a consequence, when we are ready to wean, we have no difficulty. By this means we have gradually accustomed the child to other food, and nursings have, as a natural result, become invariably less in number.

When we have thus ascertained what food agrees with the child, we can entirely withdraw the breast. A child should be nursed not longer than twelve months, and in many instances it can be weaned with safety even earlier. In cases where the infant is far from robust, and its development is slow; where it cuts its teeth tardily, does not digest food well, and is liable to attacks of gastro-intestinal irritation, nursing the child should be prolonged.

An acute illness in the child may call for prolonged nursing, it being unwise to wean during such a condition, or during convalescence.

The function of converting starch into glucose is not developed fully until the last two or three months of the first year, being in a development stage previously, and the irruption of the incisors is an index to the development of the pancreatic secretion. These physiological factors call our attention to the fact that nature is preparing the way for the infant to digest and assimilate a different food from that first prepared for it, and forms an index to us as to the time for weaning.

SLEEPING.—The young child should be accustomed to regular periods of sleep during the day; indeed, all its habits should have great regularity. As it grows older it does not need so much sleep, and after it has passed its

first year, it will not usually require more than one sleep in the daytime.

At night the child should have its separate bed. I think it very objectionable for the child to sleep with its parents. Experience has proven that the young yield vitality to the older, and the sound to the unsound. This would be a very cogent reason if either of the parents suffered from ill health. But beyond this it is not well for the child to breathe the emanations from the bodies of other persons.

Another, and a very important reason, is, that if allowed to lie with the mother all night, it will obtain a habit of frequent nursing that will prove detrimental to its own health and to the health of the mother. Many times an infantile dyspepsia may be traced to this source.

Let the child lie in its crib or cradle at the bedside, and when it requires nursing the mother can take it in the bed with her and give it the breast, placing it in the cradle again afterward. A child cared for in this way will be much less trouble to the mother, in addition to the advantage to its own health.

REGULAR HABITS.—Few persons can be convinced how readily a child may be trained to regular habits in all things. The truth is that a child is just as sensible to impressions as the adult, and is just as ready to yield obedience if it is asked in a proper manner. Beyond this is the fact that habits in childhood are very readily formed, and very persistently maintained. This is as true of bad habits as of good.

During the first three months the child should be accustomed to taking the breast about every three hours, and at very regular intervals. As it grows older it will not require it more than four times during the day, and once at night. One-half the slight illnesses, and the irritability and fretfulness of childhood might be avoided in this way.

Nursing the child whenever it cries, simply to keep it quiet, is a most pernicious habit, and will very certainly lead to ill health, usually in the form of infantile dyspepsia and colic. And yet this is a very common habit, and will require much effort upon the part of the mother to break.

The time of getting up in the morning, of being washed and dressed, of taking the morning sleep, of the afternoon sleep, should all be as regular as the clock.

There is no necessity of rocking a child when sleeping — indeed, no necessity of its being rocked at any time. If it is accustomed to go to sleep at a certain time, all that is required is to give it the breast, and put it in the crib or the bed.

PART III. DISEASES OF CHILDHOOD.

CHAPTER IV.

The diseases of childhood present to us peculiarities not met with in the adult. These are principally in symptomatology, diagnosis, and prognosis; and are dependent mainly upon the lack of development of the various functions and organs, which are yet in the developmental stage

We purpose to say a few words on the anatomy and physiology of the infant, as well as of methods of diagnosis

ANATOMY AND PHYSIOLOGY. — When the child is born, the bones of the skull are separated by the fontanelles and sutures. These permit the skull to yield readily to pressure, and it may be even indented by a blow. The shape of the head may be altered by allowing the child to habitually lie upon one side. The anterior fontanelle, which is the largest, usually becomes closed at the end of the second year. If it persists much beyond this period, it is usually due to hydrocephalus. Its premature closure is said to result in a lack of development of the brain substance and intellect.

The brain at birth is relatively of large size, and grows rapidly until the seventh year. The convolutions have a less complex arrangement than in the adult, and the sulci are not so deep. The small size of the facial portion of

the skull at birth is due to the rudimentary condition of the jaws and teeth. There are two sets of teeth: the deciduous or milk teeth, which are twenty in number, and the permanent teeth. The irruption of the temporary teeth begins at from the sixth to the ninth month. The two lower incisors usually appear first, the posterior molars, which are last, not being cut until from the twenty-fourth to the thirtieth month. Whilst this is the rule, considerable variation will be observed in the irruption of the temporary teeth. Occasionally a child may be born with teeth, which fact we have personally seen; and again dentition may be prolonged beyond the usual time. Prolonged dentition is usually due to rickets or cretinism. We have known dentition to be prolonged much beyond the usual time in perfectly healthy children—in one case to the fourteenth month.

The permanent teeth begin to appear about the sixth year, and at this time, before the central incisors are lost, the jaws contain both the temporary and permanent teeth, save the wisdom teeth only.

The glands of the neck, which are numerous, are especially prone to be enlarged and inflamed in children. This applies with more force to those of a scrofulous taint.

As in the adult, the thorax in children varies much in form, and frequently shows a want of symmetry. Rickets, diseases of the spine, and affections of the air passages in strumous children often produce deformities of the thorax.

The heart of the infant is of greater breadth than that of the adult; consequently, in examinations of this organ, the changes of the relation of the apex beat and valves with the external landmarks should be kept in mind.

The liver of the child is relatively of large size, and in infancy can be felt below the costal cartilages. It is claimed by some to be partially the cause of the protuberant abdomen of the child.

The umbilicus at birth occupies the central point of the body, and is the seat of umbilical hernia, and at times of a fistula. The hernia is caused by the persistence of foetal conditions and the want of firm cicitization. The fistula is due to the non-closure of the urachus. Although the latter condition is rare, two such cases have come to our notice.

The small intestines at birth measure about nine and a half feet, and grow rapidly during the first half year, growing about four feet. The muscular structure of both stomach and intestines is poorly developed, whilst the glands of Brunner and Lieberkuhn are developing during early life. The ease with which fat is absorbed is due to the large amount of lymphoid tissue in the solitary and agminate follicles. The peculiar structure of the colon: a short ascending and transverse, and a long descending colon, taken in conjunction with its total relative length, is said by Dr. Jacobi to be a cause of obstinate infantile constipation.

The bones are only partly ossified. They are in the stage of growth and development. The union of the heads of the long bones with their shafts, by the interposition of cartilage, is of particular interest to the physician, when called upon to treat injuries and seeming dislocations. The possibility of a separation of the cartilaginous epiphysis should be borne in mind.

The vascularity of young bone and the lack of earthy matter are responsible for what is termed green-stick fracture.

The weight and growth of the child, considered jointly, are the best indices as to its nutrition. It has been clinically ascertained that this increase in weight and growth follows normally an arithmetical progression. The average weight of 1,158 infants is given as 7.35 pounds. During the first three days there is a loss of weight, variously estimated at from six to ten per cent. of the body weight.

With the advent of the flow of milk there should be a gradual and steady increase of weight, so that by the fifth month the child should have doubled in weight, and trebled by the twelfth. A child may be healthy and not show such a rapid growth; but a loss in weight, or a stationary weight, is not consistent with a healthy child. It should show a steady gain during the first year.

The average length of 442 infants at birth was 20.54 inches. During the first year, which is the period of most rapid growth, it should grow in length a trifle over eight inches, and during the second year about three and a half inches. A rachitic or scrofulous child may be fat and heavy, but they are usually short in stature. To estimate correctly the development of the child, the increase in weight and the growth in stature should be used conjointly. Acute illness and malnutrition do not affect the growth of stature as they do the bodily weight.

DIAGNOSIS.—Though the pathological factors in diseases of children may not materially differ from those of the adult, clinically they present a variety of types that are almost endless. In infants we deal with a nervous system so susceptible that frequently functional troubles are accompanied by the gravest symptoms, and may speedily prove fatal.

The examination of a sick infant requires more circumspection and tact than in the adult. Different methods must be pursued, and the physician who desires to acquire any skill in this line must learn to use his faculties. The quicker he discards the idea of ascribing all obscure acute troubles to teething, the better it will be for both patient and physician.

It is usually best to listen to the history of the case as given by the mother or nurse, and to give it due credence, even though it does not coincide with our own precon-

ceived notions. No one is able to give better testimony as to the symptoms and actions of the little one than the ever-watchful, faithful mother.

In chronic troubles it is often necessary to ascertain the time of weaning, teething, walking, and so forth.

The personal examination of a child requires, at times, considerable tact and patience. If the child be asleep, we may obtain the pulse, respiration, and often the temperature, as well as note the character of the respirations, color of the face, and may even perform auscultation. If necessary, we may quietly slip the warmed hand under the covers and examine the condition of the abdomen. Whether awake or asleep, we should use care and gentleness. Never be abrupt and brusque with children. If the throat must be examined, leave it to the last, as it nearly always involves a struggle and the use of the tongue spatula or spoon. We employ the same methods of physical examination in children as in adults. As noted above, by inspection we notice the character of the respiration — the catchy breathing of pleurisy, the rapid, short breathing of pneumonia, or the dyspnoea of croup.

The expression of face, posture, and character of cry are all noted. Certain furrows or lines have been pointed out by Jadelot as being marked in the child suffering from serious disease, and which can also be noted. He describes them thus: The oculo-zygomatic, beginning at the inner corner of the eye and extending outward toward the cheekbone, passing beneath the lower lid, is indicative of disease of the cerebro-nervous system. The nasal line, extending from the alæ of the nose around the corner of the mouth, to troubles with the digestive organs. The labial line, extending from the angle of the mouth to the lower part of the face, to diseases of the respiratory organs.

By means of palpation and percussion, we determine the size and position of the abdominal organs. In palpating the liver, care should be exercised that we make no error

in diagnosis, as in the infant the edge of the liver is normally felt below the ribs. By this means we also determine points of tenderness and the presence of small tumors characteristic of tubercular peritonitis. We are aided in determining this affection by observing the prominent abdomen and wasted chest and thighs — contrasts characteristic of this trouble. By percussion we also determine the presence of solids, fluids, or gases, each giving the characteristic note as in the adult.

In practicing auscultation, we begin in the usual way, preferring the stethoscope in children, as they are less frightened by the instrument than by applying the ear directly to the chest. A convenient method is to have the child held over the mother's or nurse's shoulder, with the face toward the back of the mother or nurse. All portions of the chest should be examined and comparisons made. The interscapular region should never be omitted in the examination of children.

TEMPERATURE — PULSE — RESPIRATION.

In an abnormal condition of the system, the first things to be considered are the temperature, pulse, and respiration. Pulse and respiration are more readily affected, and to a greater extent, than the temperature, but the latter affords a more correct diagnosis of the patient's condition than the former.

In all acute illnesses, and in many chronic ones, the use of the thermometer plays a most important part, not only in diagnosis, but in prognosis and treatment as well. Too much importance, then, can not be attached to the study of the temperature, and a thorough knowledge of the use of the thermometer.

TEMPERATURE.—The introduction of the clinical thermometer has displaced uncertain methods, and we now deal with a certainty and with an instrument of precision.

In using the thermometer it behoves us to know what we are aiming to ascertain, and what significance is to be attached to the results attained. The average temperature of a healthy adult, when properly taken in the axilla, is 98.6° F., and the daily fluctuations do not much exceed one degree. In children the average temperature is a trifle higher, and the diurnal variations are greater. The heat-regulating center in children acts but imperfectly; hence slight causes, which in adults produce no disturbances, may in children produce considerable disturbances of the temperature.

Within the rectum the temperature rises nearly a degree higher than in the axilla.

Although the presence of a normal temperature does not insure the absence of disease, a persistent elevation above the normal, or a like depression below the established average, would establish its presence. Sudden elevations or abrupt depressions of temperature are often warnings of grave crises.

In using the thermometer there are a few things with which we should be careful to comply:

First — The accuracy of the instrument.

Second — If taken in the mouth, the bulb should be placed beneath the tongue and the lips kept closed.

Third — If in the rectum, oil the instrument; after emptying the bowels by an enema, gently introduce.

Fourth — If in the axilla, which, for many reasons, we consider the most suitable place, wipe the axilla dry, insert the bulb in the axilla, being careful that nothing comes between the instrument and skin, then draw the arm across the chest, so as to close the axilla.

Fifth — Never drive the mercury too low in the bulb. Attention to this point will often save you the mortification of pronouncing the temperature subnormal, when it is actually elevated. This is a mistake frequently made.

Sixth — Be sure that the thermometer is left in place a sufficient length of time to get an accurate reading.

The number of observations taken daily will depend upon the gravity of the case. In all cases the time of day the observation was made should be recorded.

It has been clinically ascertained that in many diseases the temperature pursues a typical or certain course, any marked deviation from which indicates either a complication or a grave crisis.

Thus, in scarlatina we find that the highest temperature is coincident with the appearance of the eruption. In measles the temperature and eruption reach their height coincidentally, and with the fading of the rash the temperature rapidly declines.

In the course of the continued fevers we have learned that a sudden rise or fall of temperature indicates some complication, and that a temperature without a remission indicates a grave condition.

In tubercular troubles we may often diagnose the disease by the elevation of the temperature before any local lesion can be discovered.

The following table, from Burt's "The Chest in Health and Disease," may prove a useful guide:

Normal temperature.....	98.6° F.	37° C.
Slight fever.....	100.4° F.	38° C.
Moderate fever.....	102.2° F.	39° C.
Severe fever.....	105.8° F.	41° C.
Dangerous fever.....	107.6° F.	42° C.
Slight collapse.....	96.8° F.	36° C.
Moderate collapse.....	95.0° F.	35° C.
Severe collapse.....	93.0° F.	34° C.
Fatal collapse.....	91.4° F.	33° C.

Loomis sums up his teachings on thermometry with these propositions, which are practical and conclusive:

First — An abnormal temperature denotes the presence of some disease in the animal economy.

Second — Certain degrees of temperature indicate fever.

Third — The height of the temperature decides the severity and danger of a disease.

Fourth — Thermometrical observations aid us in discovering the laws which regulate the course of certain diseases.

Fifth — When the normal thermometrical course of a disease has been determined, its diagnosis is simplified.

Sixth — The thermometer indicates quickly and certainly any deviation in the regular course of many diseases, the transition from one stage to another, and the commencement of convalescence.

Seventh — It reveals the occurrence of complications.

Eighth — It often reveals the imminence of a fatal termination.

Ninth — It sometimes shows the impossibility of a continuance of life.

Tenth — It is an important guide as regards the effects of remedial agents.

PULSE. — The pulse of childhood has ceased to be of much significance as a guide to the degree of fever, being superseded by the thermometer.

The rate of the pulse in infancy is from 110 to 120; in a child three years old from 90 to 95. Trivial causes often increase the frequency, so that the frequency is of less clinical importance than are changes in rhythm, volume, strength and resistance.

The pulse enlightens us as to the action of the heart, as well as the state of the artery and of the blood.

In studying the pulse at the bedside, we should note its frequency, rhythm, volume, strength and resistance.

Increased frequency denotes increased frequency of the heart's action, and may arise from any cause which excites the heart. Exercise, rapid breathing, mental emotion and

restlessness may cause the number of beats to exceed the average of health, as well as fevers or acute inflammations.

Decreased frequency denotes debility, intense shock, pressure on the brain, icterus or cold.

The strong pulse indicates active contractions of the heart and a normal tonicity of the arterial coats.

The strong pulse is associated with active inflammations, as well as hypertrophy of the heart.

The weak pulse denotes want of force, and is usually small as well as weak.

The resistance or tension is valuable as a guide in appreciating morbid conditions.

The tense pulse is met with in active and violent inflammations.

The soft pulse denotes a want of propulsive power and of tone in the arteries. It is met with in low fevers and debility. Following a tense artery, it denotes returning health.

The relation of the pulse and temperature is often suggestive both as to diagnosis and prognosis. As for instance: At the beginning of enteric fever we have a high temperature and slow pulse, which condition is often reversed toward the end. In meningitis, we may have an elevated temperature and pulse, with the decline of the temperature, the pulse may become abnormally slow, and with the further advance of the disease the pulse becomes exceedingly fast a day or two before death.

Closely connected with these conditions is the irregularity and intermission of the pulse in diseases of the brain and in the early stages of pericarditis.

RESPIRATION.—The number of respirations in the newborn is between 30 and 50. In the first year of life between 25 and 35. The breathing becomes more quiet and regular during sleep.

In disease we not only desire to know the number of respirations per minute, but we note their character as well.

As was said under "Diagnosis," we note by inspection whether the breathing is regular or irregular; whether natural and easy or labored. We can observe the rapid, labored breathing of pneumonia, or the short, catchy respiration of pleurisy.

The noisy, snoring and mouth breathing due to nasal obstructions or throat difficulties.

Close observations of these things often indicate the nature of the trouble and materially aid in the diagnosis.

CHAPTER V.

DISEASES OF NUTRITION.

A lack of nutrition and mal-assimilation form a large and distinct class of ailments in infancy. This is particularly true during the first year. The train of symptoms is characteristic of the condition, though sometimes quite perplexing to the physician. The condition is the result of a lack of nourishment. The child does not get from the food the elements the system needs for growth. There is not sufficient digestion or assimilation of food to supply the daily waste of tissue. The fault is sometimes in the digestion, but it is more frequently in the food.

We will briefly consider two conditions caused by this lack of nourishment, viz.: Malnutrition and Marasmus. A third, Acute Inanition, is added by some writers. We consider it to be an aggravated or exceedingly active form of the first group.

MALNUTRITION.

This condition is seen in children of from a few months of age to two years. It is a result of a lack of assimilation,

and is exceedingly common. It is always a cause of great anxiety.

ETIOLOGY. — There are many causes for this condition. The essential course is an insufficient amount of food or a non-assimilation of its principles. This may arise from several causes. Thus, the child may refuse all food. The food given may be entirely inadequate to supply the wants of the child, as when nursing a dry breast. This condition is most frequently met with in the first few weeks of life. Frequently mothers have assured us that the supply was sufficient, because it was escaping continually from the breast. They did not realize the fact that it was nearly all running to waste, and that the child was not getting sufficient nourishment. The character of the food may be improper, or the breast milk of poor quality.

The condition is often seen in children fed on the proprietary foods. Sudden changes of food and deficient digestion may also be causes. It is also the result of inherited conditions. The child may be delicate from birth, of feeble physical vitality, being the offspring of parents of delicate constitution, or of those afflicted with tuberculosis, syphilis or alcoholism. It may be of premature birth. It may also be partially the result of its surroundings, living in overheated apartments, or the result of acute disease. Malnutrition is not always the result of any one of these causes, but may be due to a combination of them.

SYMPTOMS. — The symptom that stands out most prominently is the gradual loss of weight. A child two or three weeks of age often weighs less than when it was born. The loss is gradual, and the child is said to be "not doing well." In acute cases the loss of weight is rapid. The temperature is variable, the extremities cold, circulation rapid, the skin dry and covered with a cold, clammy perspiration. The child worries constantly and is very fretful.

In a case I have in mind the infant cried almost continually. Its hands and feet were cold, nails blue and features pinched. The fontanelles were sunken and the bowels constipated, although this is not the rule. It vomited occasionally. These cases, unless quickly recognized and relieved, usually prove fatal.

More frequently we meet with cases whose progress is slower. Thus the child gains very slowly, if at all. It has diarrhoea frequently, and any little indiscretion will cause either vomiting or diarrhoea. The muscular development is poor, the muscles being soft and flabby. Dentition is slow, the child often not cutting any teeth until the ninth or even the twelfth month. The circulation is poor, the hands and feet being cold. The skin is unnaturally dry and wrinkled. The child is very fretful, irritable and restless.

When occurring in older children, they are seen to be thin and spare, and may be smaller or taller than the average of one of their age. They are delicate, and seem predisposed to catarrhal affections, being frequently sick. They, too, are nervous, irritable, easily excited, and offer little resistance to acute infectious diseases. Their muscular development is poor, and they become fatigued easily. Any undue fatigue or excitement renders them irritable and disturbs their sleep. They waken frequently, and are good subjects for night terrors. Their appetite is poor and capricious. They possess feeble digestive powers. The tongue is continually coated, and the bowels usually constipated. They are anaemic, feeble, and are often admired for their clear, white complexion and precocity.

DIAGNOSIS. — The diagnosis must be made by exclusion. We must carefully exclude any constitutional disease or taint. Often when the diagnosis is made, the greater difficulty presents itself of ascertaining the cause of the abnormal condition and of securing its removal.

PROGNOSIS. — When occurring in the acute form, or as a complication of some acute disease, it is uncertain. The slower cases are relieved when we are quick to form an accurate diagnosis and to discern the cause. Elements which render the outcome uncertain are a poor inheritance, high temperature, persistent vomiting, and coldness of the extremities.

TREATMENT. — The management of these cases is essentially dietetic and hygienic, not medicinal. Cases of the first class demand prompt attention, if we would be successful. Food is essential and necessary. If possible, a wet nurse should be procured; if not, cow's milk, diluted and modified so that assimilation is possible, must be given. The second class of cases is managed in a similar manner. Diet is the first and only consideration. A babe six weeks old, which apparently had been doing well at first, was discovered to be losing weight and growing thin. It cried incessantly. Its bowels were constipated, muscles flabby, face small and pinched. The mother was exceedingly neurotic. Her milk was wasting so constantly that cloths had to be worn in order to keep the clothing dry. Modified cow's milk, fed regularly, was sufficient to produce a change for the better in twenty-four hours, without any medicine being given. In another infant a change from condensed milk to cow's milk was all that was necessary. Such cases might be cited indefinitely. The essential prerequisite to successfully treating such cases is to examine carefully the food and the manner of feeding; render them such that assimilation is possible.

Plenty of fresh air is necessary. Fresh air admitted to the sleeping room often works wonders. In older children the change to an outdoor life often changes the entire physical being.

Massage and cold sponge baths help to develop the muscles and quiet nervousness. Reading and study should

be regulated, in order that nature may have some chance to produce a proper growth of muscular power. Little, if any, medicine is required. Occasionally a little Nux, Ipecac, or Liquor Bismuth may be required to allay an acute attack of indigestion or diarrhoea.

MARASMUS.

This condition is also known as athrepsia, infantile atrophy, or simple wasting. It is a symptom of many conditions in infancy. It is really an extreme or aggravated form of malnutrition seen in infancy. It is solely a failure of nutrition, without any constitutional or local organic disease.

ETIOLOGY. — The primary cause is an inherited weakness of the constitution. Food and surroundings are responsible for the rest. Marasmus is most frequently seen in public institutions or tenement houses. Occasionally cases are met with in rural practice.

PATHOLOGY. — No lesions are seen, save an anaemia of the tissues and organs. A fatty degeneration of the liver, similar to that found in any wasting disease, is occasionally found.

SYMPOTMS. — As in malnutrition, the most constant symptom is a steady loss of bodily weight. The skin is wrinkled and hangs in folds upon the limbs. Upon the body it is loose, and can be pinched up in great folds. The face is wrinkled, the temples hollow, the molar bone stands out prominently. The eyes seem large, the skin is sallow, and the patient looks old much beyond its age. The legs and arms seems to be nothing but skin and bones. The abdomen is unduly prominent, as are the joints and tuberosities. The fingers are thin and resemble bird's claws. Anæmia is marked, and the skin has a sallow, muddy hue. Heart murmurs are frequent, and later oedema is noticed.

The stools are normal or contain undigested food. Vomiting occurs upon slight provocation, and consists of undigested food. The complications met with in this condition are thrush, erythema upon the buttocks, back of the head and heels, and often, even though extreme care be exercised, bed-sores form in these regions.

DIAGNOSIS.—Between this condition and the preceding one there is no sharp dividing line, this being but an aggravated or advanced form of the preceding.

PROGNOSIS.—This will depend upon the age of the child, the duration and extent of the condition, and the intelligent co-operation of the parents or nurse in providing nutriment and a change of surroundings.

TREATMENT.—In no condition with which we are cognizant does prophylaxis do so much. An intelligent recognition of the condition of malnutrition, by the frequent use of the scales, and its prompt arrest, entirely prevents this condition. When it does exist, the treatment is as outlined for malnutrition. A wet nurse, if possible; if not, artificial feeding, preferably with the modified cow's milk, is required. We have often had the bowels rubbed daily with the raw cod-liver oil, or olive oil, which assists in overcoming the constipation and aids in growth.

If it be a premature child, or one unduly weak, it should be wrapped in cotton and kept warm by the aid of hot applications. The treatment is, consequently, entirely hygienic and dietetic. Medicines are not needed, save only for intercurrent troubles.

SCORBUTIS.

Scurvy is a general disease, characterized by marked muscular weakness, spongy gums, and a tendency to hemorrhages. It is due to deficient or improper foods. It is sometimes called "acute rachitis."

ETIOLOGY. — It is due to the absence of certain elements in the food. Recent evidence seems to show that it is the potassium salts, the organic salts of fruit or vegetables, which maintain the blood at its normal alkalinity, and that the disease is due to a lack of these. The majority of cases are met with in those fed upon proprietary foods.

PATHOLOGY. — Post-mortem changes show parenchymatous changes in the heart, liver and kidneys. In children, changes were noted in the bones, the periosteum being separated from them and the space filled with broken-down blood-clots. Hemorrhages into the muscles and under the mucous membranes are common. Changes in the bony walls of the thorax were also noted.

SYMPTOMS. — Some of the recorded symptoms resemble very much those of rickets. To this fact is, no doubt, due the name "acute rickets." It frequently supervenes upon a case of antecedent rickets.

The disease begins by great tenderness of the lower extremities, and an unwillingness of the child to move them or have them moved. A swelling is soon noticed on the lower limb or about the knee or the ankle. The skin over it is tense and shining, and seldom pits on pressure. Fractures sometimes occur near the epiphyses of the bones. The thigh is more frequently affected than any other region. The disease affects the upper extremities. Subcutaneous hemorrhages, as well as hemorrhages from the cavities of the body, are common. Anæmia, debility and sponginess of the gums appear, the swelling and sponginess occurring around the teeth. An ecchymosis may sometimes occur where a tooth is about to be erupted. Owing to the distress caused by motion, a condition simulating paralysis occurs.

DIAGNOSIS. — The diagnosis is based upon the extreme tenderness and pain on handling; the swelling along the

bones of the lower extremities, and the sponginess of the gums.

PROGNOSIS.—Always good.

TREATMENT.—This is the employment of a proper diet. Proprietary foods or sterilized milk, if being used, must be stopped, and fresh cow's milk substituted. Frequently to this may be added, with benefit, well-cooked, sieved potato or some green vegetable. Raw meat juices will also furnish the food element that is lacking. Orange and lemon juices have been the orthodox remedy for years. The diet and the best possible hygienic conditions are the only remedies required.

RACHITIS.

Rachitis, or rickets, is a chronic infantile disease of nutrition, and characterized by anatomical changes in the bones. Although the bones are the principal seat of the pathological changes, the disease also affects the muscles, ligaments, mucous membranes, and nearly all the organs of the body, particularly the nervous system.

ETIOLOGY.—The principal causes of rickets are dietetic and hygienic. It is found in all classes of society, but principally among those living under unhygienic influences, deprived of sunlight and abundance of fresh air. It prevails to some extent in all climates, but less in the warmer climates than in the temperate, no doubt owing to the fact that in the warmer climates the people live more in the open air. Children artificially fed are more prone to contract the disease than those nursed at the breast. It is, in fact, uncommon in those nursing at the breast, except when the nursing be unduly prolonged. A diet deficient in fat and proteids is the main cause. Thus, rickets often occur in children fed upon the proprietary foods, especially condensed milk, which is rich in carbohydrates, but deficient

in both fat and proteids. Supplying these latter elements tends to hasten recovery. Rickets is not an hereditary disease; heredity is simply a predisposing factor. Acute diseases of the stomach and intestines, whilst common in marasmus, are exceptional in rickets.

PATHOLOGY. — The constant and characteristic lesion of rickets is found in the bones. The changes consist in an over-production of cartilage at the epiphyseal ends of the bones and an excessive cell-growth beneath the periosteum along the shaft. The ossification is slowly and imperfectly performed or entirely arrested. There also occurs a rapid absorption of the medullary layers. The ossifying center is larger, more vascular, and consequently more spongy than natural. There is an increase in the number and width of the blood-vessels in the cartilage. The ratio of the organic and inorganic matter in the bone is reversed, there being twice as much organic as inorganic. The bones are, as a consequence, unnaturally flexible. Enlargements form at the epiphyses of the long bones, which are usually strikingly prominent at the lower extremity of the radius and the tibia. In the flat bones, large bosses or prominences form at the centers of ossification. These are soft and spongy. Owing to the lack of inorganic matter, fractures, usually of the green-stick variety, are not uncommon. The growth of the bones in length is also arrested.

SYMPTOMS. — Among the early and characteristic symptoms of rickets is the so-called "rachitic rosary," or beading of the ribs. This symptom is well-nigh constant. It is due to the formation of nodules at the junction of the costal cartilages and the ribs.

The disease advances slowly. The predominating symptoms, if there be any, are sweating of the head, extreme restlessness at night and constipation. The head will be

covered with large drops of sweat during sleep, often wetting the pillow. The child is restless, kicks off the covers, moans and tosses in its sleep. These symptoms are simply significant, not pathognomonic.

In addition to the beading of the ribs, the skull is unduly soft, especially over the occipital and posterior portion of the parietal bone. This condition is known as craniotabes. The closing of the anterior fontanelle and sutures is unduly delayed. The face seems small and the head unnaturally large in proportion to the body. The shape of the skull is also altered, by reason of the bosses forming over the parietal and frontal regions, and the flattening of the occiput and vertex, due to pressure. The irruption of the teeth is delayed, and they appear in their wrong order.

The deformity of the chest wall is conspicuous. In addition to the beading of the ribs already referred to, there is a lateral depression over the lower third of the chest at the line of junction of the cartilage and ribs. The chest is diminished in its transverse and increased in its antero-posterior diameter. These conditions are due to atmospheric pressure and the softened chest walls. In consequence of this deformity, there is also some obstruction to the respiration.

Posterior curvature of the spine is frequent. It is a gradually rounded convexity, lacking that abruptness found in Potts' disease. The limbs present the greatest variations from the normal. The deformities are symmetrical, and consist in enlargements of the epiphyseal ends and curvatures of the shafts.

In the upper extremity, the lower ends of the radius and ulna are enlarged and their shafts curved, the convexity being generally on the extensor surfaces. The changes in the shafts bear some relation to the amount of pressure to which they are subjected in creeping, and the attitude assumed by the child in sitting. In the lower limbs, the

deformity is usually a bow-leg or knock-knee. The curve is generally forward and outward. The ligaments are also lax, loose and frequently elongated; the muscles small, flabby and poorly developed. As a consequence, the child does not sit erect, and can not stand or walk at the proper age. The abdomen is unduly prominent, tympanitic and tense. This is due to the want of tone, not only of the muscular walls of the abdomen, but of the muscular walls of the stomach and intestines. Gases thus accumulate, and constipation is the rule; but this is frequently alternated with attacks of diarrhoea. Anæmia is frequent, and, while the child may be fat, its tissues are soft, pale and flabby, and offer but little resistance to exposure. The patients are frequently the subject of catarrhal inflammations, have hypertrophied tonsils, adenoid growths in the pharynx, and the glands of the cervical region are frequently enlarged.

The nervous system suffers as well. The sufferers are irritable, restless at nights, and subject to muscular spasm. It is in these children we meet with laryngismus stridulus, tetany and convulsions in the first and second years of life. The disease is essentially a chronic one. It pursues an active course for from three to eighteen months, when, with a change of diet, its activity ceases. The nervous symptoms diminish, and there is a steady improvement.

DIAGNOSIS. — This is not usually difficult. The only difficulty encountered is in the early stages. The important symptoms are: the sweating of the head, restless nights, cranio-tabes, patulous fontanelles and sutures. Later in the disease we have the beading of the ribs, enlarged epiphyses at the wrists and ankles, deformed chest, bowing of the forearms and legs. The only disease with which it might be confused is scorbutis. In the latter we have the extreme tenderness, swelling of the shafts of the bones (not the epiphyses), ecchymoses and spongy gums.

PROGNOSIS. — Although the disease is not of itself fatal, it is a large factor in the mortality of the first two years of life. It increases the dangers of the acute diseases of childhood. With a proper dietary and a change of surroundings, improvement is progressive.

TREATMENT. — The disease pursues an active course until the diet and the hygienic conditions are corrected. It tends to a spontaneous recovery, with the advent of a change in diet consequent upon age. After its activity is thus spent, the patient suffers from the effects of rickets, not from the disease. This being true, it is only reasonable to suppose the earlier treatment is begun the better are the results attained. The first attention, therefore, is not medicinal, but dietary and hygienic. The diet must be so regulated that the farinaceous foods are reduced to a minimum, and the nitrogenous foods increased. Proprietary foods should be stopped, and cow's milk, meat broths or meat, eggs and fruit substituted. These can be arranged so that the digestive organs can assimilate them. The child should be in the open air as much as possible. In large cities the public parks often furnish the only pure air and sunlight attainable to these little ones.

In the medicinal treatment, theoretically, phosphorus and the salts of lime are needed. The lime we furnish in the form of the Syrup lactophosphate. The Syrup of the hypophosphite may also be used. Phosphorus should be given when the nervous irritability is marked. Should anæmia be marked and the glands be enlarged, Syrup iodide of iron should be given. Fowler's solution of arsenic is the remedy when the muscles and skin are soft, flabby, pale and cedematous. Cod-liver oil is also used when there is frequent pulse, paleness and emaciation. Many other remedies are advocated, but, as was stated previously, the essential treatment is dietetic and hygienic, drugs being a secondary consideration.

The deformities can, in a measure, be corrected by gymnastics and massage. These are, or should be, directed so as to develop the muscles and chest and increase pulmonary expiration. The spinal curvature calls for a brace or plaster of Paris jacket. Baths, friction, massage and electricity, intelligently used, assist in developing the muscles and in the correction of deformity. The curvatures in the long bones necessitate, later, the services of the orthopedic surgeon.

CHAPTER VI.

DISEASES OF THE DIGESTIVE APPARATUS.

The digestive apparatus consists of the mouth, the throat, the stomach, and small and large intestines. The diseases we are now to study are those of the mucous membrane of these several parts, and of the functions of these organs.

Diseases of mucous structure demand a somewhat similar treatment, no matter what its location. This simplifies the therapeutics of this class of diseases, and also makes it more definite.

DENTITION, AND ITS DERANGEMENTS.

Dentition is usually regarded as the great trial of the health, if not of the life, of the child, and parents and even physicians speak of it as if it were a morbid process, instead of a physiological development. It is true that during the cutting of the teeth there is occasional disturbance, sometimes of one function, sometimes of another, but most frequently of the digestive tract. But the majority of these irregularities are but indirectly influenced by dentition, and the cause should be sought elsewhere.

As a general rule, the child exhibits evidences of buccal excitement about the fourth or fifth month. There is an increase of the salivary secretion, and the infant has a strong desire to bite or press its gums strongly against whatever is given it.

This excitement continues to the irruption of the first teeth—the front incisors—which occurs from the sixth to the eighth month. In some cases, the excitement becomes general, and there is restlessness and irritability of the nervous system, fever, derangement of digestion, and sometimes diarrhoea.

The treatment of such a case is very simple. The child should have a bath, and once or twice a day a foot-bath. Prescribe Aconite in the usual doses, and if there is much derangement of the stomach and bowels, Sodium Phosphate, to produce a gentle laxative influence, and Matricaria to allay nervous excitement and sleeplessness.

Usually when dentition is attended with such derangements, the subsequent cutting of the teeth will be attended with more irritation than the first. Especially is this the case in feeble children, at the irruption of the molars and canine teeth, during the second summer. Even these cases need but the treatment just named, unless there is a distinct complication, which will be treated hereafter.

LANCING THE GUMS.—Lancing the gums is an old practice, and is now somewhat out of vogue.

The irruption of the teeth through the gums is not a sudden nor a forcible process. As the teeth attain increased size they press upon the gum, which is as gradually absorbed before them, and in the true physiological process there is no disturbance whatever. The lesions we notice result from the deterioration of the child, induced by our abnormal civilization.

In cases in which there are lesions of the nervous system and fever, marked swelling and lividity or duskiness of the

gums, over the point where the tooth is to make its appearance, prompt relief occasionally follows the incision of the gum, and the relief of its tension by the discharge of a small quantity of blood. The tooth is cut none the quicker for the lancing of the gum. It has to come through by a process of growth, and this is a matter of time, so that days, and sometimes weeks, will elapse before it has fairly made its appearance.

In lancing the gums a sharp knife, bistoury, or gum lancet, should be used, and the incision should be directly down upon the crown of the tooth. The lancet should not be cut against the tooth, however, so as to injure it, as it is yet delicate.

TAKING CARE OF THE TEETH.—Many parents never think of caring for the teeth of the child, knowing that they have to serve but a short time, and that they will be replaced with permanent ones. These milk teeth, however, serve just as important a purpose with the child as do the permanent teeth with the adult. Their loss tends to injure the health of the child, as it impairs mastication, insalivation and digestion. Many a case of dyspepsia of the child three or four years old may be traced to this cause.

As a means of preserving the teeth, the child should be taught to wash the mouth with cold water, or water to which a small quantity of salt has been added. The decay of the teeth is owing in part to the decomposition of food between and adherent to the teeth; and if the mouth is thus cleansed after eating, this cause, at least, will be removed.

The first permanent molars make their appearance about the third or fourth year, and are very commonly mistaken for temporary teeth. These not infrequently become carious, from the cause above named, from the sixth to the eighth year. When this is the case, advise that the child be taken to a dentist, and have the teeth properly filled.

SECOND DENTITION.—The loss of the deciduous or milk teeth should commence in the fifth or the sixth year. There is a gradual absorption of the fangs of the teeth, as the permanent ones are developed beneath them. After a time they become loosened, so that sometimes they can readily be pulled out with the fingers. If not removed in time, the permanent teeth press them to one side, or forward, or backward. This gives rise to present deformity, disease of the gum, and may so change the position of the permanent teeth as to occasion lasting deformity. When it is noticed that they have become loosened, or that the permanent teeth are coming through, the milk teeth should be extracted.

The extraction of the deciduous teeth before this time is not generally advisable, not only because the child loses the use of them, but because the jawbone is imperfectly developed, and in consequence we have irregularity of the permanent set.

It is of importance that the permanent set of teeth be well formed and properly placed, so as to form a regular and uniform arch. It is not only a matter of good looks, but also of good teeth.

If the general health of the patient is good, and it is furnished with the material for the formation of bone, in such form that it can appropriate it, the teeth will probably be regular and good.

If a patient is presented showing an irregular or deformed dentition, prescribe for the general disease as if manifested by other symptoms of imperfect nutrition, the usual proportion of iron for children. The Hypophosphite of Lime, or more frequently Sodium Phosphate, in small quantities, furnishes the phosphorus; while a nutritious diet, properly selected, and such hygienic means as seem to be necessary in the case, complete the treatment.

When the teeth are developed irregularly, as regards the

arch, or overlap one another, or are angular, as if twisted upon their axes, much may be done by simple means. When a tooth is outside or inside of the line of the arch, pressure with the thumbs or fingers toward the proper place two or three times a day will occasionally accomplish the object.

The physician may instruct the parents as regards such manipulation, who will pursue it for some months, as the change is a very slow one. When the deformity is greater than we can expect to overcome by such means, a dentist should be consulted, who may apply such artificial support or pressure as will accomplish the object.

STOMATITIS.

Inflammation of the mouth in childhood assumes a number of different forms, which really differ in pathology and treatment. In some of them the sore mouth is the primary disease; in others it is secondary and symptomatic of some other affection. They range from a simple erythematous inflammation, which disappears of itself in a day or two, to that profound lesion in which the tissues soften and break down as the disease progresses.

We may divide stomatitis into the following forms: Catarrhal, Aphthous, Ulcerative, Thrush, and Gangrenous Stomatitis.

CATARRHAL STOMATITIS.

Catarrhal stomatitis, stomatitis simplex or erythematosa, is a simple acute inflammation of the buccal mucous membrane.

ETIOLOGY.—Its causes are mainly traumatic. The traumatism may be mechanical or chemical; resulting from the action of irritants of various sorts. It may be caused by the irruption of a tooth, by cold, or gastric irritation, in some cases being the result of the two.

PATHOLOGY.—There is congestion and swelling of the mucous membrane, with usually an increased production of mucus. There is also death and desquamation of the epithelial cells. The inflammation may be superficial, or extend to the submucous tissue, forming small ulcers.

SYMPTOMS.—The child first complains of its food burning or smarting the mouth, or, if too young to make its sufferings known, it will be noticed that it cries when it nurses. On examination the mouth will be found reddened and hot, and the whole mucous membrane injected. The mucous membrane is swollen, the swelling being most apparent over the gums. There is soon increased secretion, the saliva dribbling from the mouth, irritating the lips and face and wetting the clothing. The tongue is coated, with reddened edges, and the papillæ enlarged. There may also be some enlargement of the salivary glands.

The constitutional symptoms are slight, but some disturbance is nearly always present. Frequently the inflammation is so slight that it will pass away of itself in two or three days, but in other cases, especially those which are dependent upon gastric disease, it will be remarkably persistent.

TREATMENT.—In a large number of cases, indicated by the enlarged glands and sore mouth, *Phytolacca* is a very certain and speedy remedy. As there is usually fever, *Aconite* will be combined with it. Occasionally the indications will point distinctly to *Rhus*, as the restlessness, sharp, shrill cry, and reddened papillæ at the tip of the tongue, when this medicine may replace the *Aconite*.

Again, *Matricaria* is called for when the child is nervous and fretful; wants to be carried, and passes thin, greenish discharges from the bowels.

The local treatment is quite simple. The mouth should be frequently cleansed, and a solution of borax (ten grains

to the ounce) answers very well as a wash. Boracic acid can be substituted; or Hydrastis in an infusion, or a mixture of colorless Hydrastis and water, will also answer a good purpose. A solution of Sodium Sulphite, when the tongue is coated with a white fur and is broad, is one of the best of local applications. If there is a bad, cadaveric odor, a solution of Potassium Chlorate (grains x. to water $\frac{3}{4}$ iv.) may be employed.

In those cases which are due to gastric irritation, Ipecac may be added to the internal remedies, when the tongue is elongated and pointed. If the case is a persistent one, this may be followed by the Bismuth Subnitrate or Liquor Bismuth, when, in addition to the gastric irritation, there is diarrhea.

APHTHOUS STOMATITIS.

Aphthous, vesicular, follicular or herpetic stomatitis is characterized by the appearance of vesicles upon the edges of the tongue, cheek or lips, which rapidly pass into small ulcers, slightly raised and with grayish bases and a narrow, red areola.

Etiology. — Aphthæ occur in three conditions of the system: as a simple sore mouth, with exudation from gastric irritation; in cachectic conditions of the system, of which it may be an evidence; and as an attendant upon severe forms of disease, being met with especially in their later stages, when the vital power is nearly exhausted.

PATHOLOGY. — There is first the formation of a vesicle, followed by death of the epithelial cells, and the formation of an ulcer. These ulcers are superficial, commonly healing quickly, without the formation of scars.

SYMPOTMS. — The symptoms of aphthæ are well marked. The child exhibits evidences of a sore mouth, and complains of tenderness, smarting or burning, when eating; or, if nursing, it cries when it takes the breast, and some-

times refuses it except when pressed by hunger. As it occurs in very young children, this will be the principal evidence of the seat of the disease. The child is fretful, uneasy, does not sleep well, has considerable fever, and cries persistently when given the breast, and frequently lets it go, bursting out into a prolonged and painful cry.

Our attention being thus attracted to the mouth as the seat of a disease, we find the mucous membrane somewhat swollen, reddened, especially in patches, upon which there are numerous small white points of exudation. The points appear first as vesicles, upon the cheeks, the inner surface of the lips and the tongue. They soon rupture, forming small ulcers.

The secretions are increased, the breath heavy, but not foul. The mouth is tender to the touch, and the child cries when it is examined. As the disease progresses these points of exudation become more numerous, until finally the greater part of the buccal surface is thus covered. When it occurs in cachectic children, or in low forms of disease, the exudation occasionally extends to the tongue, covers the roof of the mouth, and sometimes involves the pharynx.

The evidence of gastric disturbance will frequently be obscured by the sore mouth, but in almost every case there will be found some lesion of this kind. There is also some febrile action..

DIAGNOSIS.—This is based upon the characteristic appearance of the ulcer. It is sometimes confused with thrush, in which there are white spots, without a red areola or pain.

PROGNOSIS.—In the first case the aphthous sore mouth yields readily to treatment, and is never regarded as presenting any danger. In the other two it is a very grave symptom, indicating a depression of the vital power, which renders the prognosis unfavorable.

TREATMENT.—In many cases the small dose of Aconite with Phytolacca will be the best treatment. If there is no fever, the Phytolacca may be given alone. If the face is full and purplish, and the tongue and mucous membrane of the mouth have a purplish-red hue, Baptisia should be substituted for the Phytolacca. If the tongue is red and covered with a glutinous coating, Sulphurous Acid may be given in small doses, and also used as a wash for the mouth. Indeed, in many cases this gives the best local application. If there are erythematous spots of eruption on the surface, or small vesicles appear about the mouth, or there are startings in sleep, with contraction of the facial muscles, Rhus should be alternated with Phytolacca. If there has been a retrocession of an eruption, or if we think there is an eruption under the skin, the patient will usually be dull and inclined to sleep, and we give Belladonna.

These means are of more importance than the local treatment, for with the removal of the internal disease the aphthæ disappear. The use of Aconite and small doses of Sodium Sulphite are the most valuable of these in a majority of cases.

As a local application a solution of Potassium Chlorate, or Sodium Sulphite, or Sulphurous Acid, may be employed. It may be applied with a soft cloth or sponge, care being taken not to rub or irritate the mouth. The solid stick of nitrate of silver applied to each ulcer, or burnt alum by means of a camel's hair pencil, seldom fails to heal them.

ULCERATIVE STOMATITIS.

Ulcerative stomatitis is an inflammation of the buccal mucous membrane and gums, and is rarely seen except when teeth are present. It is also known as fetid or putrid stomatitis.

ETIOLOGY.—The principal predisposing causes are, first, dentition, squalor and unhygienic surroundings, such as lack of pure air and proper clothing, damp and cold weather.

It is at times a sequel of the acute infectious diseases. Among local exciting causes are the neglect among the poor of proper cleanliness of the teeth and mouth; also carious teeth.

It occurs with scurvy, consequent upon the want of nourishment of the body, due to improper food. It is also due to the metallic poisons, such as mercury, lead and phosphorus.

It is quite rare in private practice, most cases occurring in hospitals and eleemosynary institutions.

PATHOLOGY.—The disease begins as an ulceration between the teeth, usually the incisors, and the gums. From this point it extends to the molars, and may extend to the fold of mucous membrane between the gums and lip, and along the inner surface of the cheek, forming large ulcers.

It may extend to the alveolar process, causing the teeth to become loosened and to drop out. The ulcers are coated with a thick, soft, gray membrane. The surrounding soft parts are swollen, and there may be necrosis of the jaws.

SYMPTOMS.—The disease starts at the edges of the gums, opposite the lower incisor teeth. The gums are red, swollen and spongy, and covered with a yellowish deposit, on the removal of which the gums bleed upon the slightest touch. From this region it spreads backward and to the adjoining lips and cheeks. These ulcerations break down into thick, soft, grayish sloughs, which leave the teeth exposed and soft. The diseased parts are painful, and the child cries and resists attempts at examination. There are

profuse salivation, a foul breath, occasional slight hemorrhages from the gums, and pain on mastication. The lymphatic glands are swollen and painful. The tongue is coated, swollen and tooth marked.

The general symptoms are those of a lowered vitality. Vomiting, diarrhoea and fever are at times present.

DIAGNOSIS.—The characteristic ulceration, the foul breath and saliva, and the cachectic appearance are characteristic.

PROGNOSIS.—The prognosis is usually favorable. In neglected cases, in bad cases of marasmus and when perostitis is added, the disease pursues a chronic course, and death may ensue.

TREATMENT.—The constitutional treatment in this case is of more importance than the local means. True, in some mild cases, being indicated by the foul odor of breath and saliva, the use of Potassium Chlorate as a wash, and internally, will be sufficient. When the tongue is broad, pallid and seems swollen, the action of Sodium Sulphite, in doses of two to five grains, every three hours; where it is red and covered with a glutinous nasty coat, Sulphurous Acid is the remedy. In other cases, indicated by bright red color of the mucous membrane, and anaemia, the use of tincture muriate of iron with glycerine may be alternated with it.

The remedies named under the head of aphthæ may find a place here, according to the indications, Phytolacca being especially a good remedy, as is also Echafoalta, indicated by a tendency to gangrenous state and sloughing of the soft parts. Following this, Quinine with Hydrastine may be given, or when there are objections to the use of Quinine by mouth, it may be employed by inunction. Occasionally, small doses of triturated Podophyllum can be used with advantage, but it must never be carried beyond a slight laxative effect. The cases in which this would be

necessary would be those where the tongue was covered uniformly with a yellowish coat, some tumidity of bowels, with papescent and clay-colored stools.

The local applications in this form of sore mouth are Baptisia, Sulphurous Acid, Sodium Sulphite, or Echafolta. As already named, the Potassium Chlorate answers well in the mild cases, but can not be depended upon in those more severe.

Occasionally one or two ulcers will be very persistent, and not yield to the ordinary treatment. Such may be lightly touched with the stick nitrate of silver.

THRUSH.

Thrush, sprue or stomatitis mycosa, is characterized by the formation upon the mucous membrane of the mouth of pearly white, soft and slightly adherent flakes or patches, which show a tendency to spread to adjoining structures.

Etiology. — Thrush is produced by a fungus known as the *saccharomyces albicans*. The conditions which favor its growth are, any pathological changes of the mucous membrane of the mouth, as a catarrhal stomatitis, and an acid medium. It is frequently found in poorly nourished, bottle-fed children, and is said to be caused by uncleanness of the nipples, bottles or utensils used in feeding; or by a cloth, which has been used in an infected mouth. It is frequent in children suffering from malnutrition, or any wasting or constitutional disease, with its consequent impaired vitality.

Pathology. — The fungus forms among the epithelial cells and acini of the mucosa, forming a dense network. It begins as small isolated spots, and gradually spreads. The usual site is upon the tongue, or the inside of the cheeks, and it not infrequently involves the lips, tonsils, pillars of the fauces and the pharynx.

SYMPTOMS. — The essential symptom is the pearly white spots, resembling milk curds, upon the mucous membrane of the tongue. These gradually coalesce and spread to the cheeks, lips and hard palate. Unlike coagulated milk, they can not be easily wiped off. If forcibly removed, small bleeding points are left. There is some soreness, heat, dryness and lividity of the mucous membrane. If allowed to remain for a few days, these spots become yellow or brown, and can be wiped off, leaving a smooth surface.

The general symptoms are those of the associated disease, and are usually those found in wasting, artificially-fed children having some gastro-intestinal derangement.

DIAGNOSIS. — This can be accurately made by the microscope. The disease might be mistaken for milk curds or aphthæ. Milk curds are easily removed, leaving no bleeding points. In aphthæ there is salivation, and small whitish spots or patches, surrounded by an areola, which speedily form ulcerations.

PROGNOSIS. — Thrush in itself is not a serious disease; but occurring as it does in delicate, feeble children, it may prove a serious complication, by interfering with the taking of nourishment.

TREATMENT. — The treatment of thrush is confined in a large measure to its prevention by a careful attention to cleanliness of the mouth and feeding utensils. All nipples and bottles should be kept in a solution of boric acid or sodium bicarbonate, and the mouth frequently washed or cleansed with a similar solution, avoiding sweet or syrupy mouth washes. Lime water or Sodium Sulphite, preferably the latter, should be used as a wash after each feeding.

The medicinal treatment is the treatment for the existing condition to which the thrush is added. A digestible and nourishing diet, the correction of any gastro-intestinal derangement, and the administration of iron, cod liver oil

and tonics are usually indicated in debilitated patients, along with proper hygienic measures.

GANGRENOUS STOMATITIS.

Gangrenous stomatitis, cancrum oris or noma, is a rapidly spreading gangrenous affection of the gums and cheeks in children, which extends to the other tissues of the mouth, and usually terminates fatally.

ETIOLOGY.—Fortunately this is a rare disease, and is usually found in children from two to five years of age, living under the most insanitary conditions. It is usually a secondary affection, occurring in ill-nourished, sickly children during convalescence from some of the acute fevers, such as measles, scarlet fever, typhoid fever or pertussis. The larger number observed have followed measles.

Cancrum oris may follow stomatitis ulcerata, but in the majority of cases is a distinct disease.

PATHOLOGY.—The pathological process is a rapidly spreading gangrene, with resulting necrosis and perforation of the cheek. Bronchopneumonia may result from aspiration of gangrenous particles or from metastasis. Colitis or a purulent pericarditis may also result from metastasis.

SYMPOTMS.—Gangrenous stomatitis commences with a hardness and swelling of the cheek and lips; when this appears externally, it presents a blanched, glossy appearance. On examining the mouth we find but little tenderness, the part swollen being but slightly redder than usual, more frequently dusky, livid or blanched, and having in its center an ash-colored eschar. The tongue is pale and somewhat coated, the stomach and bowels deranged, with marked exhaustion and cachexia, with languor and rest-

lessness. The temperature is elevated, pulse feeble, and the restlessness followed by dullness, apathy and coma.

The eschar soon spreads, sometimes extending to the lips and gums, and is attended with a copious discharge of saliva, which soon becomes fetid; the secretions of the mouth and the breath are offensive. As the ulcer progresses it extends both in depth and circumference. Passing through the mucous membrane, it involves the cellular tissue, and frequently dissects the part for some distance beyond the circle of ulceration. Thus the ulcer is larger, and, in every respect worse, deeper in between the tissues, than appears in the mouth.

Still progressing, it destroys part after part, until near the surface. Now a small vesicle or pale ashy-colored spot is formed upon the skin, which soon becomes livid and sloughs. The ulceration now spreads rapidly, destroying the muscles, integument, and bones, until death terminates the child's sufferings.

When the ulceration has progressed in this way, recovery occasionally takes place, leaving the child fearfully deformed.

The course of the disease is very active, rarely lasting beyond two weeks. When recovery does take place a line of demarcation makes its appearance, the slough is thrown off, and granulation and cicatrization result.

DIAGNOSIS. — This disease will usually be readily determined. The child complains of sore mouth, and presents a markedly cachectic appearance. The breath is fetid, the secretions unpleasant, the mucous membranes pallid or livid. Then the circumscribed swelling and hardness, as described with the commencing ulceration, will be sufficient. This trouble may be mistaken for ulcerative stomatitis. It should be remembered that the latter is mainly confined to the gums and alveoli; and, whilst the cheek may be ulcerated, there is no extensive sloughing.

PROGNOSIS.—Few cases recover from noma. When recovery does take place, the resulting deformity renders life burdensome.

TREATMENT.—The treatment of this case will be varied to meet the indications, yet we obtain the best results from the use of Potassium Chlorate and chlorine water, Sulphurous Acid, Sodium Sulphite, Phytolacca or Baptisia, or Echafolta. In some cases quinine (in malarial regions) is administered internally, but in many the inunction of quinine once a day will answer the best purpose. Especial attention must be given to the food of the child, which is to be fluid. Hot milk, with a small portion of salt, is a very common and good food; beef-tea, if there is a feeble circulation and muscular feebleness; rice, nicely prepared with milk, tapioca, farina, etc., must be selected as occasion requires.

If there is some febrile action, small doses of Aconite can be used with benefit. Occasionally the bowels are sluggish, and the patient suffers from retention of faeces; in place of giving a cathartic, the bowels may be moved by a stimulant enema.

The points of ulceration should be touched with nitric acid, being careful to reach all the parts involved. Use the strong acid with a piece of pine wood, so shaped as to be most easily applied. The application should be thorough, both for the purpose of arresting the spread of ulceration at once, and to prevent the pain of frequent applications; or, in place of this, the galvanic cautery can be used. Sometimes one application will be sufficient; at other times it will have to be repeated for three or four days. In addition to this cauterization, the mouth should be washed with Echafolta, a solution of boric acid, or of salicylic acid. Cleanliness of the mouth is essential not only as a preventive measure, but is essential when the disease has developed. In addition to these local means,

DISEASES OF CHILDREN.

the strength of the child must be maintained by stimulants, food and tonics.

ACUTE PHARYNGITIS.

This is an inflammation of the mucous membrane of the pharynx.

Etiology.—It may be a primary affection, or secondary to some of the acute infectious diseases, such as scarlet fever or measles. When primary, the most common cause is a cold. In some cases it seems to be associated with gastro-intestinal irritation.

Pathology.—The situation of the disease varies in different cases. In some the inflammation is of the fauces, tonsils, and base of the tongue; in others it is of the pharynx proper, and in others still, it involves the posterior nares, the vellum, and, to some extent, the larynx. The character of the disease also varies in different cases. In some it seems scarcely more than an irritation. In others it is an acute erythematous inflammation. In others the deeper tissues are involved, and there is considerable swelling. And in still others the inflammation progresses to change of structure and ulceration.

Symptoms.—We determine the existence of sore throat in the nursing child by the uneasiness and evident pain as it nurses and swallows. Sometimes it will refuse the breast on this account. Usually the child is more or less feverish, is irritable, sleeps poorly, and wants to drink frequently, though to swallow the water occasions pain. The throat becomes dry, and this is the principal reason for the craving for drink. There is some stiffness of the neck, and slight enlargement of the cervical lymph glands.

On examination we find the throat presents evidences of inflammation.

Diagnosis.—The only disease with which it may be confused is a simple tonsillitis and a scarlatina, or measles

before the eruption has appeared. In the latter we have to wait for its appearance. Care in the meantime should be exercised.

PROGNOSIS.—Always favorable, save only in the liability to repeated attacks.

TREATMENT.—The simple sore throat of childhood yields readily to simple treatment. The patient is placed upon the use of Aconite, with Phytolacca, in the usual doses, which are continued every hour, until all evidence of the disease has disappeared. The local application to the throat externally should be, where necessary, a flannel cloth wrung out of cold vinegar, with a dry one over it. If there is some hoarseness, the stillingia liniment is advisable.

The young child can not use a gargle; indeed, it is almost useless before the age of ten or twelve years. In older persons, a gargle of Potassium Chlorate, of Sodium Sulphite, of Baptisia, of Sodium Bicarbonate, or of Hydrastis, may be used with success.

When the disease is severe, and requires more prompt relief, direct that an inhalation of the vapor of Lime water, or water and vinegar, be used. If no apparatus for inhalation is convenient, we may heat the fluid in a tin or other vessel, and place it near the child, throwing a light blanket or shawl over it and the child's head; a hot iron being gradually put in the fluid, raising the necessary quantity of steam. Occasionally the inhalation may be medicated to advantage with Baptisia or Hamamelis.

CHRONIC PHARYNGITIS.

Chronic disease of the pharynx, fauces, soft palate, and tonsils is occasionally met with in the child, and is generally of an inflammatory character. All of these parts may be involved in the disease at once, or one or two may be

affected separately. It is frequently associated with disease of the posterior nares, and occasionally with disease of the larynx or bronchi.

Etiology. — Occurring in persons of feeble vital power, and consequently poor blood and impaired nutrition, we can easily see how any irritation may progress and run into this disease. With such conditions of the system, it is most frequently caused by cold, and follows ordinary sore throat. Repeated attacks of tonsillitis, or of sore throat, may give rise to it in persons otherwise of good constitution. It may also be a sequel of diphtheria or chronic catarrh.

Pathology. — The mucous membrane covering these parts is thickened, the blood-vessels, especially the veins, enlarged, and the mucous follicles increased in size and activity. With this changed and enfeebled condition, the transformation of epithelial cells into pus cells, and the reparative material into pus, is easy.

Symptoms. — It is noticed that the child is easily affected by cold, frequently complaining of sore throat; that it frequently clears the throat by an act of hawking, and expectorates mucus or muco-purulent material in considerable quantity. There is also a change in the voice. Quite often the child will make an unnatural gurgling noise or snores when it sleeps.

The constitutional lesions vary in different cases, in some marked, and in others slight; but as they are only incidentally related to the disease we are describing, it is not necessary to enter into a detailed description.

Diagnosis. — The symptoms above named having drawn our attention to the throat as the seat of a disease, we make an examination of it by placing the patient in a good light and depressing the tongue, using the head mirror.

Making such examination, we find the mucous membrane thickened, relaxed in color, and the tonsils enlarged, unnatural and spongy, and covered by mucus or a muco-purulent secretion.

TREATMENT.—The general treatment named for chronic catarrh will be applicable to this case. If called in consequence of a recent cold (which always increases the throat trouble), administer Aconite with Phytolacca or with Rhus, as may be indicated. If the mucous tissues are deeper and relaxed, Sulphurous Acid may be given with advantage, especially if the tongue is dirty and the breath bad. With the dull purplish color of mucous membrane, and sometimes also of face, the patient should have Baptisia.

Restoratives are very generally indicated, and we select them as heretofore named. Minute doses of Veratrum and Arsenic, Compound Syrup of the Hypophosphites, Cod-Liver Oil, the different preparations of malt, hypophosphate of lime, inunctions with quinine, etc.

If the child is old enough to use a gargle, we may employ the Hamamelis, alternated with Potassium Chlorate. The Hamamelis may be used in the form of the tincture, $\frac{5}{ss}$. to water $\frac{5}{iv}$; the Potassium Chlorate in solution, $\frac{5}{j}$. to water O_j . In place of the Hamamelis we may use the Hydrastis, Cornus, Alnus, or Marsh Rosemary.

If the child can not use a gargle, the same remedies may be employed with the *spray* apparatus. Occasionally good results may be obtained by using a remedy in powder, allowing it to dissolve on the tongue.

A flannel cloth wrung out of cold vinegar and applied around the throat, with a dry flannel over it, on going to bed, is a very important aid to the treatment. If the vinegar produces irritation of the skin, it should be diluted. When the cloth is removed in the morning, the neck and shoulders should be washed freely in cold water, drying with brisk friction. This is the most certain means to

prevent the frequent taking cold, which in some cases seems to be the greatest obstacle to permanent recovery.

ADENOID GROWTHS OF THE VAULT OF THE PHARYNX.

This is quite common in children, and is the source of much discomfort, many of the minor ailments in childhood frequently being associated with this condition.

ETIOLOGY.—It is said by some to be hereditary, and several members of the same family may be similarly affected. The abundance of lymphoid tissue in the retro-nasal space, and the readiness with which it is excited into active growth in the child, account in part for these growths in the vault of the pharynx. The growths are concomitants of that condition known as "lymphatism," and are most common in delicate, rachitic children. Repeated attacks of acute coryza account in part for their excessive development. The first symptom frequently follows an attack of influenza, measles, scarlet fever or diphtheria. This is, no doubt, the result of the congestion and inflammatory infiltration of the throat caused by these diseases.

PATHOLOGY.—Adenoid growths are reddish in color, spongy and very vascular. A very common form is a cushion-like mass, corrugated and red in color.

When soft, they are quite friable and easily removed. At times they are pendent from the vault of the pharynx on a line with the Eustachian tube.

The growths appear to spring from the mucous membrane covering the localities where the connective tissue fills the inequalities of the base of the skull.

The masses are not large, but they create an obstruction to breathing and excite and maintain a catarrhal state of

the membranes of the nose and pharynx. With this condition there is frequently an enlargement of the faucial tonsils.

SYMPTOMS.—Among the earliest symptoms of post-nasal hypertrophy is an obstruction to nasal breathing. Even though the growth may cause only partial occlusion, the patient finds it more comfortable to breathe through the mouth. While this may not be constant, and may be more particularly noticed during sleep, it renders the child restless. It tosses about and sleeps in all positions to secure rest. The breathing is noisy, and often snoring. Night terrors and enuresis are often traceable to this cause. In infants it interferes with nursing, and in older children with blowing of the nose, owing to the fact that the expiratory current is interfered with. There is also a nasal discharge. The voice is altered, and has a muffled, nasal twang.

Frequent attacks of otitis and tinnitus are often due to these growths, as normal ventilation of the tympanic cavity is interfered with. In older children and neglected cases, the general appearance of the patient is changed. The facial expression is dull, heavy and stupid; the nose is pinched, the voice thick and nasal, speech and hearing both affected: the thorax deformed or distorted, the so-called pigeon breast, and there is a marked mental and physical impairment. Owing to the interference with sleep and respiration, the nutrition of the patient is almost always interfered with, and the child becomes anaemic.

These hypertrophies are said to have a limitation, and to gradually recede with the maturity of the system. This does not apply to all cases, as occasionally pronounced cases are seen in the adult.

Patients suffering with this disorder are said to contract diphtheria more easily, and attacks of diphtheria, scarlet fever, measles and whooping cough are more severe.

DIAGNOSIS. — The general aspect of the patient will be taken into consideration. The mouth breathing, voice and deafness are characteristic. The rhinoscope should be used, as well as digital exploration. The finger passed up behind the palate reveals the situation, size and extent of the growths.

PROGNOSIS. — The prognosis is, in the majority of cases, satisfactory. When cases are allowed to remain unrelieved, the consequences incident to these growths can not be corrected.

TREATMENT. — An operation on mild cases should not always be insisted upon. Internal medication and change of climate and surroundings may induce absorption. Should complications arise, or the growths manifest a tendency to grow, operative measures are called for.

Too much reliance must not be placed in medication. We usually give such remedies as are called for by the systemic condition. Arsenic, in the shape of Fowler's solution, in the case with relaxed, atonic skin, and feeble circulation. Cod-liver oil, when there is paleness and emaciation, tissues soft and atonic, and cough. Potassium Iodide, with enlarged glands and broad, atonic tongue, with leaden pallor. Phytolacca, if the throat is sore and glands enlarged. Syr. iodide of iron, when there is anaemia and enlarged glands.

Usually radical measures are called for. Should the growth be small and soft, some operators remove the mass by means of the finger nail, without anaesthesia. It is usually better to use an anaesthetic; then one will be enabled to operate more carefully and thoroughly.

The instruments needed are a mouth gag, such as is used in intubation; a Lowenberg cutting forceps, and a Gottstein curette. The cutting forceps can be used to cut away such growths as are pendent and can be seized by it,

after which the curette should be swept over the vault, care being exercised lest damage be done to the mucous membrane of the pharynx.

TONSILLITIS.

Tonsillitis is an inflammation of the tonsils, and is recognized as occurring in the following forms: Acute Follicular, Acute Phlegmonous and Chronic Tonsillitis, or Hypertrophy of the tonsils.

ETIOLOGY. — Inflammation of the tonsils is a very peculiar disease, in that the tendency to it is hereditary in some families, and that, having once occurred, there is a continued predisposition to it, and it recurs sometimes during the entire lifetime.

Tonsillitis occurs most frequently at the commencement or breaking up of winter, when the weather is very changeable. A slight cold, contracted at such times, will be followed by an attack.

Children suffering from chronic hypertrophy are more liable to an attack. The follicular form, while not common in infancy, is a very common disease of childhood.

The phlegmonous form is most frequently seen in early adult life, and is a disease of the cellular tissue around the tonsil.

The chronic form is usually associated with adenoid growths of the vault of the pharynx, and chronic catarrh of the same. The most important local cause is repeated attacks of the acute and subacute forms. While it is true repeated attacks of the acute form will cause hypertrophy of the tonsils, it is equally true hypertrophy predisposes one to acute attacks.

PATHOLOGY. — The tonsils are composed of an association of follicles, terminating on the free surface by ducts, through which the secretion is passed for the lubri-

cation of the fauces. These follicles are bound together with a rather loose areolar tissue, and the whole is invested by a reticulated fibrous capsule, and covered externally by mucous membrane. The structure is such as to permit very great variations in size. Thus, in simple congestion, they may attain a size three or four times as large as in the normal state, and under inflammatory action with exudation their bulk is still further increased. The looseness of the tissue likewise permits organized exudative material to once or twice the usual size of the organ.

In the follicular form these crypts or follicles become filled with exudation products, such as epithelial, pus cells and mucus. They form cheesy-looking masses which project from the orifices of the crypts. These plugs can be wiped off the surface or squeezed from the crypts. There is also acute congestion, swelling of the tonsil, and more or less pharyngitis. It is usually bilateral.

In the suppurative or phlegmonous form, there is also an inflammation of the cellular tissue around the tonsil. It may terminate in resolution or suppuration. This form is usually unilateral.

In the chronic form, there is a permanent enlargement, due to an increase of the lymphoid tissue, and also of the connective tissue stroma. If the increase of the latter be slight, the tonsil is soft, and is of the normal form found in children and young adults. Should the increase be large, the tonsil is hard and firm. All intermediate degrees are found. Tonsillitis is frequently associated with adenoids of the vault and chronic pharyngitis.

SYMPTOMS. — Tonsillitis usually manifests itself first by soreness and stiffness of the throat, with difficult deglutition, and more or less derangement of the digestive functions; occasionally it is ushered in with a marked chill, followed by febrile reaction. There is always some fever, dryness and constriction of the skin, and general

arrest of secretion. The temperature rises rapidly to 102° or 103° F., and in severe cases even to 104° or 105° F. In a few hours the patient complains of pain, and a sensation as if some foreign body were present in the throat, with heat and constant desire to swallow. Examination of the throat will reveal a swelling of the tonsil and isolated yellow spots of variable size. Later there is acute congestion and more swelling. The constitutional symptoms last only about three days: the exudation disappearing about the fourth.

In quinsy the general symptoms are about the same. When fully developed, deglutition becomes so difficult and painful as to occasion extreme suffering, and in some cases it is impossible. A guttural cough, with frequent desire to remove the secretion from the throat; a hoarse and difficult respiration, and confused whispering articulation, or sometimes entire loss of voice, is observed. In the severer cases it becomes impossible for the patient to lie down, and in many but little rest is obtained in consequence of the difficult respiration. If we examine the throat in this disease, we will find the tonsils enlarged and reddened, and pushed upward and forward. The inflammation and swelling seem to be mainly behind the tonsils. There is also intense inflammation of the mucous membrane covering the fauces and uvulae, the latter being œdematosus and pushed to one side, at times nearly closing the fauces.

An attack of quinsy continues for a variable length of time; usually from four to twenty days, and terminates sometimes by resolution, at others by suppuration. When it terminates the latter way, the gland rapidly enlarges; there is a dull throbbing pain or aching, and a yellowish color near where the pus points; usually it readily comes to the surface and discharges without assistance, but sometimes it is very slow and requires the bistoury.

In chronic hypertrophy of the tonsils or chronic tonsillitis, there is more or less obstruction to breathing, and disturbed sleep, the respirations being loud and snoring, the child frequently waking up in a paroxysm of shortness of breath. The voice is nasal in tone, and articulation is interfered with, the child talking as if the mouth were full.

This condition is frequently associated with adenoid growths, and may become a cause of deafness.

The symptoms of this condition are not, as a rule, marked until after the second year of life.

TREATMENT.—The treatment of the several forms of tonsillitis is practically the same at the outset. Select remedies with the same care as in other diseases. Aconite, when the pulse is small and frequent, associated with pyrexia. Belladonna may be added to the above when there is dusky redness of the mucous membranes, and the patient is dull and drowsy. Gelsemium in the opposite condition, when there is flushed face, bright eyes, contracted pupils and restlessness. Phytolacca is nearly always associated with or alternated with the sedative mixture. Indications calling for its use are enlarged tonsils and glands, pains of a rheumatic character in the muscles of the neck and limbs. Rhus tox. should be used in cases of sharp stroke of the pulse, bright red throat, with sharp, burning pain in the same, and frontal headache. Tinct. ferri chlor.: Tongue and mucous membrane tumid and glistening red, tissues relaxed. Sulphurous acid is a very good remedy if the tongue is red and dirty, and the tissues of the throat red and relaxed.

In the follicular form the internal administration of these remedies is usually sufficient. In quinsy, or the phlegmonous form of tonsillitis, in addition to these, we employ local measures. If seen early, a very efficient local application is a gargle of a solution of Sodium Bicarbonate, or it can be applied dry to the tonsil. Pieces of ice can be

held in the mouth or applied by means of the ice-bag to the neck, with the hope of staying suppuration.

Penciling the tonsils with Veratrum will also exercise a marked influence on the inflammation, and will sometimes arrest it at once.

These means should be persisted in, and even though they do not arrest the inflammation, they will most frequently prevent suppuration. But in cases in which suppuration ensues despite this treatment, much relief is given by the use of inhalations, and sometimes by hot fomentations applied to the throat. As a general rule, the abscess will open itself, and this we would always prefer in children. If it does not, and the symptoms of obstruction in the throat become alarming, it will be necessary to lance the tonsils. This is done by guarding the bistoury with cotton or plaster nearly to the point. It may then be accomplished without danger.

The treatment for the radical cure of the disease, or for chronic hypertrophy, will vary in different cases. In the mild cases, the general health being good, rely principally upon the local application of persulphate of iron; at first one part to three of glycerine, but increasing its strength as the treatment progresses, until it is used full strength, if necessary. The continued use of the Hamamelis, applied to the tonsils once or twice daily, will also give good results. If there is disease of adjacent parts, the treatment advised in chronic pharyngitis should be used in addition.

When these means fail, we may have to resort to excision.

The tonsils are easily removed with a *tonsillitome*. The important part of the operation is to include the whole of the tonsil in the ring of the instrument, so as to remove it when the knife is thrown forward. If not wholly removed, the disease may be reproduced, just as if nothing

had been done. If there should be hemorrhage following the operation, pencil the part with persulphate of iron, or a saturated solution of alum, or employ pressure.

In cases where the tonsillitome has been used, and recurrence has taken place, we have used galvano puncture. This method can also be employed where, for any cause, there is an objection to an operation.

GASTRALGIA.

The term gastralgie is used to express the condition of pain in the stomach, whether the pain is the result of irritation of the gastric nerves, from cold, from irritative ingestum, or from spasmodic contraction of the muscular coat. In slight degree it is of very frequent occurrence, and is quite often seen in a severe form. With some children it is of daily recurrence, and is usually called colic. It not only causes much suffering to the child, but is a source of very great annoyance to the parents.

ETIOLOGY. — The most common cause of pain in the stomach is indigestion. The child nurses well, and frequently thrives, but some portion of the food undergoes decomposition and proves irritant, or generates gas, which unduly distends the stomach. In some of these cases there seems to be a peculiarly irritable condition of the gastric nerves, so that a very slight cause is sufficient to produce pain. In other cases it results from cold, and in these there is fever; and in others there is a real spasmodic action, or cramp of the stomach. Girls are more subject to attacks, much more noticeably as they approach puberty. It is not a disease of infancy, but is more marked in older children.

PATHOLOGY. — Numerous views are brought forward to explain this. It is supposed that the sensory fibers of the pneumo-gastric and the solar plexus are involved, through the distribution of the former to the stomach.

SYMPOMS. — The child exhibits evidences of pain in its countenance, is uneasy, and will not remain in one position, and has violent paroxysms of crying. In some cases the body is drawn up, and the lower extremities are flexed upon the abdomen. Occasionally there are eructations and some of the food is thrown up, showing imperfect digestion; but at other times the milk will be curded and sweet, showing healthy digestion.

In the majority of cases the pain is paroxysmal, lasting for five or ten minutes, during which the child seems to suffer severely, and cries violently; it gradually abates until there is comparative ease, and as we are about to congratulate ourselves that the pain has wholly passed away another paroxysm comes on suddenly. Thus it may continue for an hour or two, or for a considerable portion of a day.

DIAGNOSIS. — The disease is to be differentiated from hepatic colic and from the pain of functional gastric disorders. Hepatic colic will be shown by the icterus; the latter pain by coated tongue and other evidences of disturbed digestion.

TREATMENT. — In many cases we find one or two drops of Nux to a half glass of water, given in half teaspoonful doses, every fifteen minutes to one hour, will give relief. If there is irritation of the bowels, also with griping pain, Colocynth gtt. j. to gtt. ij. to water $\frac{3}{4}$ iv., a teaspoonful every half hour to hour, will give relief. In some cases Aconite may be used with both of these, and aids in relieving the pain. Dioscorea gtt. xx. to gtt. xxx., to water $\frac{3}{4}$ iv., is a good remedy. Apis answers a good purpose when the pain in the stomach is associated with an eruption like "heat," and Belladonna, if such an eruption has disappeared from the surface. Another excellent remedy is: Rx Chloroform gtt. xx., Glycerine $\frac{3}{4}$ ij., in doses of one-fourth to one teaspoonful, as often as required.

When these attacks are of frequent occurrence in nursing children, we may suspect a wrong in the mother's diet or digestion, and this being looked after, we will sometimes find that our little patient has more comfort. In other cases the pain is a symptom of infantile dyspepsia, and lime water, Sodium Phosphate, or some of the simpler tonics, will give permanent relief.

The best local applications, as a general rule, will be a hot, dry flannel applied over the stomach and abdomen, or the hot-water bottle. Sometimes the use of the hot flannel to the spine will give speedier relief than when used over the stomach. In children of one year and older a mustard plaster may be used.

VOMITING.

Vomiting occurs in children from very slight causes, and we are called to prescribe for cases in which it is marked and seems the most characteristic symptom. It occurs as a complication of many acute diseases, and sometimes alone, there being no other disease present. In the first case it increases the severity of the primary disease, prevents the absorption of remedies, and the taking and digesting of food. It thus becomes, when severe, an unfavorable complication.

We can not determine, in many cases, any cause for this irritation. In some it depends upon imperfect digestion of food; in others from cold and arrested secretion. In acute disease it is doubtless owing in part to decomposition of food, taken before the disease was fairly announced.

In most acute diseases in children, prominent among the symptoms is the occasional nausea, retching, and effort to vomit. The child is thirsty, and desires drink frequently, but when any quantity is taken it is ejected by vomiting. If nursing, it wants the breast frequently, and after nursing it throws up its milk. When the child is weaned, it will generally reject all food.

If medicine is given, it will be thrown up after a time. Thus, in the treatment of acute disease, we may be giving the sedatives, or any remedies, every hour; the child takes three or four doses, and then there is sickness of the stomach, and the whole is rejected.

In other cases vomiting, without other disease, may continue for several days, or in slight degree for two or three weeks. Necessarily there is sympathetic disturbance of the nervous system, and of other functions, and digestion being arrested, the child is much prostrated. This condition has sometimes been styled as a neurosis.

Vomiting arising from disease of the brain is of very serious import. This case is diagnosed by the contracted and pinched appearance of the countenance, the dullness of the eyes, and the increased frequency and hardness of the pulse (there are some exceptional cases in which the pulse is small and weak). The skin is dry, sometimes husky, the temperature of the trunk slightly increased, but the extremities are cold. The vomiting is sudden, forcible and projectile.

In acute intestinal obstruction, vomiting is nearly always present and persistent. It is at first bilious, but soon becomes faecal. It is also accompanied with marked prostration and obstinate constipation.

These forms of vomiting are to be distinguished from the vomiting observed in infants due to overfilling the stomach. In this case there is no retching or effort, and the food is but little changed, the vomiting taking place soon after nursing.

If the tongue is examined in irritation of the stomach, it will sometimes be found reddened, contracted and pointed; in others, pale and atonic. If coated, it will be with a white fur, confined to the center.

While the vomiting is not always dangerous, it is a great source of inconvenience and worry, and interferes with the

administration of medicine and the partaking of nourishment. It, therefore, demands our early attention.

TREATMENT.— When there is febrile reaction or increase of temperature, apply cold applications over the epigastrium. In the opposite cases, a sinapism or a spice plaster may be used. In all cases much benefit will follow the use of the hot foot-bath, which, if the extremities are inclined to be cold, may be rendered stimulant by the addition of mustard or capsicum.

If the tongue is elongated and red, we may administer small doses of Aconite and Ipecac. If the pulse is sharp and the patient has frontal headache, the remedies will be Aconite and Rhus. In the second case, when there is evidence of atony, the prescription will be: Nux gtt. j. to gtt. ij., water $\frac{5}{4}$ iv.; a teaspoonful every half hour. Occasionally an infusion of our old-fashioned compound powder of rhubarb given in small doses will give relief.

Benefit sometimes results from the preparations of bismuth; either the subnitrate, carbonate, or liquor bismuth may be used. The first I generally prescribe with mint water, in doses of from one to three grains.

When the irritation is very persistent, the bowels being constipated, an enema of weak salt water, to move the bowels, will aid in giving relief. If the temperature is high, the injection may be cold; if the patient is exhausted, the injection should be hot. In these severe cases be very careful in administering remedies and giving food after the irritation seems to have been subdued.

ACUTE GASTRITIS.

Acute inflammation of the stomach is rarely met with in the child, and only, as I believe, from the administration of irritant substances. Subacute inflammation, however, is met with quite frequently, and is sometimes very persistent, being usually associated with an enteritis or colitis.

ETIOLOGY. — The causes of inflammation of the stomach are twofold. It may be produced by the ordinary causes of inflammation in other organs, as from cold, arrested secretion, etc. It is also the result of irritant ingesta, or of such decomposition of food as gives rise to irritant products, or to irritant secretions.

PATHOLOGY. — The structural changes in the mucous membrane are congestion and swelling, due to the hyperæmia and exudation of cells into the mucosa. The mucous membrane is also covered with an increased amount of mucus, which is more marked at the pyloric end and along the greater curvature; this is due to the great increase of secretion from the mucous glands.

In gastritis caused by the ingestion of irritant poisons, such as the mineral acids or caustics, if the quantity taken be sufficient, the mucous membrane is destroyed and converted into a soft, blackened mass, with perforations. Usually the force of the poison is spent upon the pharynx and oesophagus, owing to the spasmotic contraction of the muscles of these parts, which prevents their passage into the stomach in an amount sufficient to cause such an extensive destruction. In such a case the poison produces ulcerations of the mucous membrane, surrounded by a zone of intense congestion. Should recovery take place, the resulting cicatrix produces contraction and deformity, which may ultimately result in stenosis of the pylorus.

SYMPTOMS. — Acute gastritis may occur as an idiopathic affection, or as a complication of some other disease. In the first case it is announced by nausea, retching, and vomiting, following a short forming stage, in which for a few hours the child has been restless and uneasy, not caring for food, but wanting to drink freely. Occasionally there is a pretty well-marked chill lasting for an hour or two.

The retching and vomiting are not constant, but come on at irregular intervals, are quite violent and attended

with much straining. When the stomach is thus relieved for the time being, the child seems to lie easily, and sometimes falls into a short sleep. Presently the thirst increases, it wants drink continually, and having taken but a small amount, again commences vomiting. When the stomach is emptied of food, the constant retching brings up nothing but frothy mucus and serum streaked with blood. The vomited matter is sour, the tongue heavily coated with a white fur, and the breath foul. There is pain and some epigastric tenderness.

There is always more or less fever. Usually it is paroxysmal, following the course of the vomiting. In some cases the nausea and retching simply increase the irritation of the nervous system and the circulation, and there is no abatement of the febrile action.

In some cases the irritation of the nervous system is very great, and manifests itself in uneasiness and restlessness, crying and other evidences of suffering. In a few cases the irritation is of such character as to produce convulsions, which are usually very severe and intractable.

Should the gastric irritation not be arrested, it will result in one of three ways: In nervous irritation, occasionally convulsions, and finally coma, gradually increasing until it proves fatal. In irritation of the intestinal canal and diarrhœa, which, running the usual course, terminates in the same manner as muco-enteritis. In an irritative fever, which rapidly assumes typhoid symptoms, and proves one of the severest diseases we are called to treat.

When the gastritis results from the ingestion of a corrosive or caustic poison, the effects of the poison will be seen upon the mucous membrane of the mouth and pharynx. Vomiting takes place almost immediately upon its ingestion, the vomited matter being usually mixed with blood. There is rapid collapse and death in a few hours. If the amount taken be not sufficient to produce such rapid

results, the case pursues the course of an acute gastritis, with vomiting, pain, epigastric tenderness and diarrhoea.

PROGNOSIS. — The prognosis of acute gastritis is favorable, excepting in those cases resulting from caustic poisoning. In such cases, if death does not result from shock, few children survive the inflammation following.

TREATMENT — The treatment of an inflammation of the stomach is quite simple, and usually very successful. The first object is to so modify the irritation as to stop nausea and vomiting, for these perpetuate if they do not increase the irritation; afterward we have time for the removal of the inflammation.

The patient should have a general bath if febrile reaction is high, followed by a hot-mustard foot-bath, continued for twenty-five or thirty minutes. In some cases a general hot bath, using salt in the water, will prove beneficial; if this be used, the applications to the epigastrium should also be hot. In the majority of cases a spice bag (made of equal parts of ground allspice, cinnamon and cloves) should be applied hot over the stomach. Instead of this, a sinapism, made of three parts of flour to one of mustard, may be used.

To allay the irritation and stop the vomiting, small doses of Ipecac may be given internally when the tongue is elongated and pointed with reddened tip and edges. In place of this, Bismuth, with mint water, or Liquor Bismuth, may be given, especially so if, in addition to the irritation of the stomach, there is diarrhoea.

With the heavily coated tongue and foul breath, minute doses of Sodium Sulphite would answer a better purpose.

To allay the intense thirst, small pieces of ice may be swallowed. The diet should be carefully regulated and principally liquid. Milk well diluted with lime water and given in small quantities as often as necessary. Absolute rest in bed is imperative.

To modify the febrile action small doses of Aconite are employed; five drops to four ounces of water; a teaspoonful every half hour or hour will be the proper quantity. If there is much irritation of the nervous system, we may give the Gelsemium, in doses of from one to three drops, with the sedative. We find that these remedies not only answer their specific purpose, but they also have a beneficial influence in arresting gastric irritation.

In some cases we find the bowels inactive, and occasionally the gastric disease is increased by accumulations in the intestinal canal. As it is clearly out of place to give cathartics by mouth, we must depend upon enemas. An enema of salt water will sometimes exert a marked influence in checking nausea and vomiting; not so much in gastritis, of course, as in simple irritation of the stomach, yet its influence in this respect is beneficial. Simple enemata are used when the object is to empty the lower bowels, but when the small intestines are to be reached, the enema should be of compound powder of Jalap, or of Castor Oil, in warm water.

Should the inflammation be the result of a corrosive poison, the chemical antidote should first be given. If vomiting has not then taken place, an emetic should be administered and the patient given mucilaginous or oily liquids, such as milk, Sweet Oil, infusions of Marsh Mallow or Slippery Elm. The general symptoms will then be treated according to the indications.

CHRONIC GASTRITIS.

Chronic Gastritis, Chronic Gastric Indigestion, Gastric Catarrh and Dyspepsia are terms used to explain a variety of functional disorders of the stomach. A chronic indigestion probably can not exist for any length of time without producing some catarrhal inflammation.

To many persons the name infantile dyspepsia will sound singular, as they have been accustomed to think of dyspepsia as associated with a long-abused and worn-out stomach. Yet dyspepsia is a very common complaint with the child — almost as frequent as in the adult, though not so persistent.

ETIOLOGY. — There are several causes of infantile dyspepsia, and we will obtain a better knowledge of the disease and of its therapeutics if we study these. They have reference to the quality and quantity of the food, to the secretion of gastric juice, to the muscular action of the stomach, and to the condition of the upper intestinal canal.

We find this disease most common in infants who have other food than the mother's milk. Here the trouble is in the difficulty with which the food is digested, and the imperfection of this process, in which some portions undergo decomposition. This may be corrected in some cases, to a limited extent, by changing the food, by giving it in a less concentrated form, and in such manner that the secretion of saliva may be increased. Thus, in a case where the child was being fed on cow's milk, simply diluting the milk with one-fourth water has proved successful. Or, when it was fed with a spoon, or from a cup, the use of the bottle, so as to call for the act of sucking, would cause an increased flow of saliva, and the little patient would be greatly benefited.

A very common cause of infantile dyspepsia is overfeeding. This is the most common in nursing children, and depends not only upon the taking of too large a quantity at a time, but upon too frequent nursing. In the one case the stomach is overdistended, and overworked, and gradually it loses its power of digestion, and evidences of dyspepsia are manifested. In the other case the stomach is allowed no repose, in which to regain its lost power, or

for its own nutrition. The result is that its function becomes gradually impaired.

Various conditions affecting the nervous system, such as heat, cold, errors in clothing, the too early use of tea, coffee and spices, are frequently responsible.

In another class of cases the dyspepsia is dependent upon a *bad* blood, resulting from the constitutional diseases, such as syphilis, tuberculosis or rickets.

The child is cachectic, lacks power in every organ, and this, as well as other functions, is impaired.

Dyspepsia is not always a gastric lesion. The small intestines have as much to do with the digestion of food as the stomach, and a lesion here gives rise to dyspepsia. Generally this, so far as we can see, is a simple atony; at other times it is an irritation. The atony is not only of the small intestines, but also of the liver, the pancreas, and indeed of all associated parts. In such cases the circulation of blood and the innervation are deficient; there is a want of normal stimulus. So, in cases of irritation, the associated organs are involved, to a greater or less extent, and there is too much blood and innervation to these parts.

There are cases in which a failure of power in the muscular coat of the stomach is a cause of dyspepsia in infants, as well as adults. Others in which there is a defect in the secretion of gastric juice, either in quantity or quality. These in the child are principally of an atonic character, and hence there will not be so much difficulty in the treatment as in the disease of the adult.

PATHOLOGY.—In nearly all cases there is a nervous debility, resulting in a lowered force, which may directly cause digestive failure, or a predisposition to the same. Defects, both quantitative and qualitative, in the gastric secretions, as well as a lack of tonicity in the muscular walls, are, no doubt, at times responsible for the digestive trouble. The changes in the organ are confined to the

mucosa. They are the changes due to a catarrhal inflammation, and consist of degeneration in the gastric tubules. The stomach is congested in patches, somewhat thickened, and, owing to the enlargement of the follicles, appears rough. There is also an increased production of mucus. In more severe cases the stomach is of a grayish color, and there is cell infiltration. The impairment of muscular power and the fermentation of food and mucus induce dilatation, and the mucous surface is coated with a thick and tenacious mucus. Chronic gastritis is nearly always associated with a similar lesion in the small intestines.

SYMPTOMS.—The symptoms of dyspepsia in the child vary greatly; in some cases being well marked, in others obscure. Usually the child is uneasy after taking its food, and is frequently troubled with colic. Vomiting of the food is of common occurrence, and if the matters ejected are examined, they will be found to consist largely of undigested food and mucus; the food will be found acid, smelling sour and sickly, or undergoing incipient decomposition, it having remained long in the stomach without undergoing digestion. These changes in the matter ejected are characteristic; for in the vomiting which follows mere repletion, in which case the overloaded stomach takes this easy mode of relieving itself, the food is sweet, the milk well curded, presenting evidences of a healthy condition of digestion.

The bowels are generally constipated, the passages being two or three days apart, though diarrhoea may exist. Frequently attacks of diarrhoea alternate with constipation. The stools contain undigested food and mucus. There is also flatulence, which causes a distention of the stomach and bowels and colicky pains. This distention, in connection with the atonic condition of the muscular structure of the stomach, present in some cases, may lead in time to an actual dilatation.

With this digestive lesion we notice that the child becomes pale, the tissues soft and flabby, the circulation feeble and the extremities cold. There is also, in most cases, very marked irritation of the nervous system, the child being restless, irritable and fretful, and at night tosses about, awakes frequently, and wants to drink.

In some cases there is the same desire for food, even a ravenous appetite at times. In other cases the appetite slowly fails, and the child cries neither for food nor for the breast. When this form continues for any considerable time, the child becomes anaemic and much debilitated.

The simplest division of these cases is into the *irritative* and *atonic*. In the first case the evidence of gastric irritation is pretty well marked. There is the red tongue, the irritability of the nervous system, the pinched face, and bright eyes, the harsh skin, and the greenish, acrid discharges from the bowels.

In the *atonic* form of dyspepsia, the tongue is pale, a whitish pasty fur accumulates at its base, the breath has a sickly odor, the child is feeble and languid, and likes to remain in one position, the face is pallid, the eyes dull, the face expressionless, the skin soft, relaxed, and cool, the pulse soft and feeble, and the discharges from the bowels light-colored.

DIAGNOSIS. — The diagnosis will be made in part by the symptoms above named, which point to the stomach as the seat of a lesion, and in part by exclusion. The difference in the diagnosis between the adult and the child is, that the first points out the location of the unpleasant sensations, while in the second we have to determine this by careful observation. By making the examination thorough we are enabled to exclude one organ after another until the evidence of the gastric lesion becomes positive.

PROGNOSIS. — The prognosis is not always favorable. It will depend much upon the kind of food the child is

taking: if nursing, it is favorable; if fed on cow's milk or other food, it is unfavorable. It is generally grave in proportion to the change in the matters vomited; if they are but little changed, or seem to be undergoing the process of digestion in a proper manner, we conclude that the lesion of the stomach is simple in its nature. But if they are undergoing decomposition, and have an unpleasant odor, the evidence of serious lesion is strong.

The principal danger lies in the predisposition to diarrhoeal diseases in summer, and to the occurrence of acute diseases in the debilitated condition necessarily produced.

TREATMENT.—The first thing that should engage the attention of the physician is the food of the child, for, as we have seen above, the lesion is frequently dependent upon a deficiency in this. If the child is being raised on cow's milk, or other artificial food, we must see that this is the best of the kind, and properly prepared and given. The directions heretofore given under the head of food for the child may be studied with advantage.

When the child is nursing, inquire as to the mother's diet, for not unfrequently indiscretions upon her part will have caused, and may perpetuate, the disease. Usually it is the use of vegetables and fruits in too large quantity that has first occasioned it. In some cases the dyspeptic lesion of the child depends upon a similar gastric lesion upon the part of the mother, and it is her imperfect digestion which deranges its stomach.

In case of indiscretion in diet, the physician should emphasize the importance of care in this regard; and when this is not so manifest it will be well to change the mother's food until we have discovered what was giving rise to the trouble. When the mother suffers from dyspeptic symptoms, or has imperfect or feeble digestion, it will be proper to put her upon a course of treatment that will restore the functions of the stomach.

In some cases it becomes necessary to wean the child, as it becomes evident that the disease can not be controlled otherwise. In some, feeding the child with cow's milk is attended with benefit, though in others the child rapidly fails after it is put upon it. Some of the artificial foods, when the child will take them, at times do well. When artificial food disagrees with the child it increases the pains in the bowels, and is either vomited or is carried off by a diarrhoea, or the child does not seem satisfied nor gain in weight. In all such cases the chances of saving the child are much better if a suitable wet-nurse can be obtained, and this should be clearly stated to the parents at as early a period as possible.

It is also essential that care be paid to the skin. If it seems dry, inelastic and in folds, baths containing Sodium Bicarbonate or common salt should be given daily, followed by inunctions of Olive or Cod-liver Oil. In connection with the baths, attention must be paid to the clothing and to the environments.

Fresh air and sunshine in abundance are admirable tonics for these frail little ones. We have helped many of these cases by attention to these details, without any medication. Medication with these details neglected counts for nothing. The essentials of a successful treatment are, then: diet, hygienic conditions and surroundings. The medicinal means we employ in accordance with the classification of cases as found in the symptoms. In the atonic cases, Nux fulfills more of the demands than any other one of our remedies. In cases in which there is constipation, or diarrhoea, with colicky pains, the tongue is slightly coated with a yellow fur, and the skin is sallow and inelastic, the medicine is certain to produce good results.

Hydrastis is a good remedy in many cases; we use it when the liver seems enlarged and full, and there is also constipation and debility. The bowels are bloated and flatulent, and there are eructations of gas.

Xanthoxylum is a remedy we have found of considerable value in those cases marked by a general torpid condition, a sluggish circulation, and relaxed mucous membranes, with gaseous distention of the bowels.

Collinsonia is useful when there is relaxation of the mucous membrane of the lower bowels, and congestion and a tendency to prolapsus of the rectum.

In some of the more simple forms of infantile dyspepsia we will find the administration of Sodium Phosphate in small doses, three or four times a day, either alone or with the food, will answer an excellent purpose when there is constipation (about ten grains daily for a child three to six months old). Common salt will also exert a marked beneficial effect with nursing children, in some of these cases.

Where the dyspepsia is of the irritative form, with elongated, pointed tongue, with reddened tip and edges, we prescribe Ipecac. If there is diarrhoea in connection with the irritation of the stomach, use the Subnitrate, Subcarbonate or Liquor Bismuth in small doses. We have found Bismuth Subgallate of considerable value when the tongue has a reddened, glazed appearance, and there is irritation and distention of the stomach and bowels, and diarrhoea.

Lycopodium has been esteemed very highly by many in those cases where, in addition to the irritation of the stomach, as evidenced by the vomiting, there is pain under the shoulder blades and in the stomach, obstinate constipation, flatulence, ashy complexion, and dry skin.

Where there are evidently accumulations in the small intestine, an infusion of the Compound Powder of Rhubarb, given to produce its laxative effect, may precede the other remedies.

In some cases of irritative dyspepsia we will obtain much advantage from the use of small doses of Aconite, repeated every one or two hours for a day or two, and afterward at

less frequent intervals. The wet pack to the abdomen may also be resorted to with advantage in more acute cases.

In some of these cases Podophyllin, thoroughly triturated, will prove one of our best remedies. As named in the first part, it should be triturated in the proportion of one part to ten or twenty of sugar; have Ipecac triturated in the same way, and combine them in equal parts, making powders of one-half to one grain. This may be given three or four times a day, and associated with the tonics, as before named.

COLIC.

Colic is the term applied to severe paroxysmal pains occurring in the intestines. Whilst it is really only a symptom, it is of such frequent occurrence in infancy, and requires special treatment so often, a separate description is necessary.

ETIOLOGY.—We may distinguish two forms of colic in children, the one being temporary and arising from slight indigestion, the other bearing a close relationship to the bilious colic of the adult, and due to spasmodic contraction of the muscular coat of the intestines.

The first form is of very frequent occurrence, and in some cases seems to be natural to the child. It comes on from the slightest causes, and, lasting an hour or two, passes away, and the child seems as well as ever. With many it will continue to recur frequently for the first three or four months, and will then cease.

When occurring from indigestion, it is associated with flatulence. The flatulence arises from the decomposition of the food or secretion, or both. It is met with in infants who are nursing, as well as in those artificially fed. The distention of the intestines with gas, and their inability to expel it, is, no doubt, responsible in a measure for the pain.

Muscular spasm is also an element of pain to be taken into consideration.

The second form of colic is caused by cold, by some indiscretion in the diet of the mother, or occasionally by mental excitement, from anger, fear, grief, etc. The child not only suffers much pain, but there is functional disturbance, and some fever.

PATHOLOGY. — The pathology is one of painful distension and contraction of the muscular walls of the intestines.

SYMPTOMS. — In either form of colic, the child is uneasy, changes its position frequently, bends its body in various directions, and cries persistently. Simple crying, however prolonged, would not be evidence of colic, but with the contortions of the body, and frequent change of position, the diagnosis is pretty evident. It may continue but a few minutes, or for half an hour. When it lasts long it is remittent or paroxysmal. With the expulsion of the gas the symptoms usually subside at once.

The second form of the disease presents the same evidences of pain, but it is of longer duration, continuous, and severer. I determine its character principally from contraction of the features which expresses pain. The flexion of the trunk and of the lower extremities upon the abdomen is more persistent.

DIAGNOSIS. — Although this is easy, we must always be on the watch for some grave intestinal lesion, as appendicitis, intussusception, or some inflammation.

PROGNOSIS. — Although always good, some cases prove quite obstinate in yielding to treatment.

TREATMENT. — In many cases the colic is speedily relieved by the administration of Nux Vomica, as — R Nux gtt. ij., water $\frac{5}{4}$ iv.; a half teaspoonful every fifteen minutes or half hour. If the child is feverish, Aconite in the usual doses may be alternated with this. In ot-

cases the indications will be stronger for Colocynth, and I usually administer it as follows: B Colocynth gtt. ij., Aconite gtt. iij., water 5iv.; a teaspoonful every half hour. Dioscorea or Epilobium will sometimes give prompt relief. The Dioscorea when the skin is dry and the muscles contracted; pain constant, with exacerbations. The Epilobium when the pains are attended or followed by dysenteric stools.

Chamomilla is a favorite with me when the child is quite restless and the colic is succeeded by greenish discharges from the bowels. The child is usually worse at night than during the daytime.

If the pain is excessive, Chloroform may be used to produce partial anesthesia and give relief. If we can not relieve the patient in any other way, Chloral may be given to relieve the pain until other means can be employed.

If the attack is very severe, and relief is not obtained in this way, an enema of hot water (sometimes cold is better), or water to which we have added Glycerine, may be used. This is especially good when there is much flatulence.

Sponging the abdomen with hot water, the general hot bath, hot packs to the abdomen, a cold pack, if the temperature of the child is increased, a sinapism, or the application of chloroform, will suggest themselves to the practitioner, and will be selected according to the indications.

If the child suffers from gastric irritation or dyspepsia, we will treat the case as has been named for those affections. And if owing to errors or imprudence in the diet of the mother, we will endeavor to have them corrected.

DIARRHŒA.

Simple diarrhoea is of very frequent occurrence with children, and will arise from any cause deranging the processes of digestion, or from cold. This disorder depends upon increased peristaltic action and secretion.

ETIOLOGY. — Children are very susceptible to diarrhoea, and especially so during the first two years of life. Season is a factor well known, as diarrhoeal diseases of all descriptions are more prevalent during the summer months, and gradually decrease with the lowering of the temperature. It can not be said to be a disease engendered by filth, as in private practice we meet it in all grades of society. It is no doubt true that uncleanliness of surroundings, person, and clothing, as well as poverty and neglect, are strong predisposing factors. Dentition has been proverbially considered a factor; and it is claimed dentition and loose bowels are a normal combination. This is a fallacy that should be dismissed, as it is dangerous. The most common causes are improper food, overfeeding, too frequent feeding, impure food, and feeding from contaminated or dirty vessels. The larger number of cases are met with in artificially fed children, where the necessary care is not taken in preparing food and utensils.

We recognize the several forms of the disease as in the adult; first, from irritation of the intestinal canal, due to the ingestion of a foreign body; second, from atony of the intestines; third, from imperfect digestion; fourth, from nervous influences, which seem to act in conjunction with other causes, such as cold, atmospheric heat, exhaustion, or fright. A simpler classification, however, and more easily recognized in practice, is the two forms: diarrhoea from *irritation* and diarrhoea from *atony*.

PATHOLOGY. — There are no pathological changes. It is only when it passes into one of the inflammatory forms that changes are found.

SYMPTOMS. — In diarrhoea from *irritation* the discharges from the bowels are dark-colored, usually a shade of green, or in some cases of a light or pea green. They are sometimes acrid, so that when they have continued for some

time, they excoriate and chafe the child. Usually the child manifests some uneasiness before having a stool, and there is some straining with it. Occasionally there is febrile action, the skin being harsh and the temperature elevated.

In diarrhoea from *atony*, the discharges are light-colored and watery, and passed without any pain or uneasiness. They are usually larger than in the other case, though the amount of solid matter is not increased. Here, if it persists for some time, the child seems relaxed, the skin soft and cool, extremities cold, face pallid, and circulation enfeebled.

In both cases the appetite is impaired if the diarrhoea continues, and what food is taken is not well digested; consequently the patient loses strength and flesh as the disease progresses.

DIAGNOSIS. — There is no difficulty in the diagnosis. The factors to be considered are its cause and its outcome.

PROGNOSIS. — Usually good. The element of danger is that it may pass progressively into one of the inflammatory forms of intestinal diseases, and thus prove fatal.

TREATMENT. — The diarrhoea of irritation may be very frequently controlled by the use of Aconite alone, in the usual doses. When the tongue is elongated and pointed, generally we continue Ipecac with it in the following proportion: $\frac{1}{2}$ Aconite gtt. iij., Ipecac gtt. v., water $\frac{5}{4}$ iv.; a teaspoonful every hour. The Euphorbia Hypericifolia will sometimes prove a better remedy than Ipecac, and may be substituted for it in about double the proportion, when the evacuations are painful and there is gastric irritability.

Epilobium can be substituted for either when the tongue is dry, the skin dry and pinched, and the discharges are large and attended with pain.

If the patient complains of uneasy sensations in the abdomen, with tormina and some tenesmus, the prescrip-

tion might be: $\frac{1}{2}$ Aconite gtt. iij., Colocynth gtt. ij., water $\frac{3}{4}$ iv.; a teaspoonful every hour.

Dioscorea will be substituted for the Colocynth when the skin is dry, the abdominal muscles contracted, the pain constant and attended with acute exacerbations, and there are evidences of biliaryness.

Matricaria we have always esteemed highly in diarrhoeas in children, when the passages are green, attended with colicky pains, and the child is restless. Cuprum Arsenitis is another good remedy when there are spasmody pains in the stomach and extremities.

When there is evidence of irritant matters in the intestinal canal, an infusion of Compound Powder of Rhubarb may be given to produce an action upon the bowels, and afterward in smaller doses until the diarrhea ceases; or, in place of Rhubarb, we may use Castor Oil. After obtaining this action, we may use Bismuth Subnitrate in doses of one to three grains every two or three hours.

In atonic diarrhoea we frequently substitute Nux for the Aconite, as: $\frac{1}{2}$ Nux Vomica gtt. iij., Ipecac gtt. v., water $\frac{3}{4}$ iv.; a teaspoonful every hour.

In atonic diarrhoea we may use the preparation of Rhubarb, above named, to change the character of the secretions; or in its place: $\frac{1}{2}$ Neutralizing Cordial $\frac{3}{4}$ ij., Chloroform $\frac{3}{4}$ ss.; a teaspoonful every hour. Podophyllin, thoroughly triturated with Prepared Chalk, is an excellent remedy in these cases, when given in minute doses, say the one-fortieth of a grain.

If the tongue is pallid, the patient should have Sodium Bicarbonate, or in some cases lime water, whatever else may be given. If the tongue is deep red, an acid should be given, usually Muriatic Acid. If the tongue is red and dirty, the remedy will be Sulphurous Acid.

Leptandrin is an excellent remedy in those cases in which there is evident torpor of the liver, and would be

preferable to the Podophyllin, were it not that the dose has to be large, and the remedy is very unpleasant. Stimulants, especially the aromatics, may be used in some of these cases, but as a general rule they are not so beneficial as in the adult.

ACUTE GASTRO-ENTERITIS.

Acute gastro-enteritis, gastro-intestinal catarrh, summer diarrhoea, cholera infantum, or summer complaint, is the usual intestinal trouble that prevails among children during the summer months.

Etiology.—This form of diarrhoea prevails regularly each season, in many instances almost as an epidemic. It occupies a middle ground between acute indigestion and ileo-colitis.

Cholera infantum is a disease of the second year of childhood—a period which may be considered one of the climacterics of life, as there is now a change from the fluid food obtained from the mother to the ordinary food of man. The change is a great one, but when there is strong vitality and good development, it is made without any appearance of disease. But if from any cause the child is enfeebled, or its development in other respects is tardy, it then suffers.

Cholera infantum occurs in the summer, making its appearance in May, June, or July, and in the severer cases lasting until frost and cool nights in the fall. A continuous high temperature always increases the severity of the disease, while a moist, cool atmosphere gives relief. As a general rule, it is more severe on low lands than on high ground, and is unfavorably influenced by the ordinary malarial causes.

The factors, then, are age, heat, improper food or feeding, and unhygienic surroundings. The most prolific

cause is the food, and the exciting cause an acute attack of indigestion. In connection with these there is a consequent decomposition or fermentation of the food left in the stomach and intestines, a consequent irritation and diarrhoea. It is a well-known fact that the vast majority of cases occur in artificially fed children, and some irregularity in the preparation of the food or the care of the utensils is responsible for the attack of acute indigestion which proves to be the exciting cause.

Many have urged dentition as the cause, but as this is a physiological process, except when disturbed, we would expect to find the disease only in cases of dental irritation, whereas we find it in children who have no teeth, who are not cutting teeth at the time the disease commences, who have all their deciduous teeth except the four last molars, or when showing no swelling, tenderness or irritation of the gums.

PATHOLOGY.—There is no sharp distinction between the lesions of gastro-enteritis and those of ileo-colitis. The latter, affecting the lower ileum and colon chiefly, are more advanced, and involve the deeper parts of the intestinal walls.

The lesion of gastro-enteritis is said to be a catarrhal inflammation of the entire intestinal tract, varying in severity, but affecting mostly the colon, the lower ileum, and the stomach.

The gross changes found on post-mortem examinations are not proportionate to the severity of the symptoms, and hence often disappointing. This is especially so in the more acute cases. The stomach and upper portion of the small intestine may appear almost normal to the naked eye. In the lower portion of the ileum and the large intestine there are indications of a catarrhal inflammation. The most important of these are the local patches of congestion, and the swelling of Peyer's patches and the lymph

nodules from cell proliferation. The exudation from the blood vessels is slight, and may be wanting.

In cholera infantum of the severer acute type, there is also, most likely, some involvement of the sympathetic nerve, leading to a dilatation of the capillaries and a transudation of serum into the intestines, and to alterations of the pulse, temperature, and respiration.

SYMPOTMS.—Various classifications of the diarrhoeas of children have been made, but all meet with some objection. The most serious objections to them are that there is no sharp dividing line between them, many transitional forms are met, and one form passes almost imperceptibly into another, and they frequently assume a chronic form. The simplest subdivision suggested is the one here adopted, namely: into functional and inflammatory diarrhoeas. The former having been described under the title "Diarrhoea," it remains but to describe the inflammatory forms, under the titles Gastro-Enteritis and Ileo-Colitis.

Clinically there are two forms of acute gastro-enteritis: the simple form, sometimes styled as (1) acute dyspeptic diarrhoea and (2) true cholera infantum.

The onset of acute dyspeptic diarrhoea varies, as well as does the clinical picture. It may be mild in its commencement, the child appearing in a normal condition, save only in an increase of the number of stools daily, with little or no fever, but restless at nights. Owing to the mildness of the general symptoms, these cases are neglected, under the impression that the child is teething. After several days the stools become more frequent and quite offensive, and accompanied with much gas. The stools vary in character; in nursing children they at first consist of curded milk, mixed with a greenish feculence; afterward they contain mucus, and are slimy and tenacious. In other cases the stools will be of a green or brownish frothy material, mixed with mucus.

The odor is very pronounced, and adheres to the clothing and room for some time. The general health is soon affected, the child becomes pale, the limbs soft and flabby. It is fretful and sleeps badly, and emaciation is rapid.

In other cases the onset is sudden. The child is restless and uneasy, and has considerable fever. The discharges from the bowels are not at first very frequent, but they are preceded by colicky pain, the child flexing the body and the lower extremities to remove the pressure. The discharges are attended with some tenesmus, and in some cases the straining will be quite severe and prolonged. The abdomen is sensitive and swollen. There is also frequent vomiting and great thirst. The vomited matter consists at first of curded milk and undigested food, followed, after the stomach is emptied, by mucus, serum, and bilious matter. The thirst is so intense that everything offered is eagerly taken, only to be soon ejected. Retching is frequent and distressing.

As the disease progresses the discharges from the bowels become more frequent, and are attended with greater uneasiness. They also contain more mucus; indeed, sometimes seem to consist almost entirely of it. The febrile reaction also continues, and sometimes becomes quite severe. Generally it will run its course in from six to eight days, the fever ceases, the inflammation of the bowels passes away, and the diarrhoeal evacuations stop.

In other cases, convulsions may occur in the onset, and the child lies in a semi-stupor, with eyes partially closed, yet it is restless, tosses uneasily, and awakens with each stool. The skin is hot and dry, and the temperature elevated. Emaciation and prostration are marked and rapid.

Relapses are frequent, usually with the advent of each unduly hot spell, or are due to some indiscretion in the

diet. It may assume a chronic form, when the emaciation becomes marked, the stools irritating to the genitals and skin. The features pinched and the skin muddy, hanging in loose folds without any elasticity. This course is only relieved by the advent of cool weather. The relapses also may lead to an ileo-colitis, or to the sudden development of a true cholera infantum.

DIAGNOSIS.—We diagnose these attacks of gastro-enteritis by the febrile reaction which comes on with the diarrhoea, and by the tormina and tenesmus which attend the discharges. They can not always be distinguished from acute indigestion. The diagnostic points are: the greater severity of the constitutional symptoms, the offensive fluid stools, and their occurrence in summer. From dysentery it is distinguished by the feculence of the discharges. In some cases the diseases are associated, and we have a true dysenteric diarrhoea.

PROGNOSIS.—The prognosis in this form of gastro-enteritis is usually favorable. There are many factors to be taken into consideration, however, before forming our opinion. They are, briefly: the duration of the attack, the mode of feeding and our ability to furnish a food that will be accepted and digested, and the absence or presence of other diseases, such as pertussis or rickets. Pertussis we have always found to be a most serious complication.

CHOLERA INFANTUM.

In comparison with the preceding, cholera infantum is rare. The initial symptoms may be sudden, but the disease is usually preceded for a day or two by a slight diarrhoea, which gives the child but little uneasiness, and is scarcely noticed by the mother. The development of the cholera-form symptoms are, however, rapid.

Presently the child manifests an intense desire to drink, and greedily takes whatever is offered. This causes nausea and vomiting, and the fluids are thrown up about as soon as taken. The diarrhoeal discharges also become more frequent, and are large and exhausting, and are evacuated with considerable force. If there has been no preceding diarrhoea, they are at first fecal, but soon become watery and light yellow or greenish in color. Frequently they are so thin and colorless as to pass through the napkin without leaving scarcely a stain. At other times the stools are brown and liquid, and have a peculiar musty odor. They vary considerably in number, from twelve to twenty, or even fifty or sixty, within the twenty-four hours.

In a very short time the child is much prostrated, there is frequent retching and vomiting, especially when anything is taken upon the stomach. The thirst is a very marked feature, the child wanting water all the time, and crying for it whenever it sees a cup or glass; yet if even a teaspoonful is taken, it is thrown up. The evacuations from the bowels have also increased in frequency.

The prostration is extreme, and often alarming from the onset. The face is pale and pinched; the eyes, cheeks, and fontanelles sunken; the muscles are flabby, and hang from the bones in folds, and a peculiar pallor overspreads the entire countenance.

In the early stage the nervous symptoms are those of irritation.

The skin is harsh, dry, and constricted, and in some cases seeming to be drawn upon the patient like parchment. There is great irritability of the nervous system, the patient being restless and uneasy, never satisfied, always changing its position, wanting everything, satisfied with nothing, and especially restless and wakeful at night. The child seems to be worse in the after part of the day and evening, and frequently every other day. When the disease becomes

very severe, it is impossible to keep the child in bed at night; the heat seems to torture it, and it is only satisfied when laid where it can turn freely about, or when carried from place to place.

These symptoms are replaced by a continued moving of the head from side to side, the child sleeping with its eyes partly open, and rolling the eyeballs upward. The pupils are somewhat dilated, and do not contract freely upon exposure to light. Stupor, coma, or convulsions soon follow. The stupor and coma may occur at the first, following the first few watery discharges.

In some cases the skin is harsh or dry, and the pulse hard and increased in frequency; in others the skin is soft and doughy, the body and extremities cold, and the pulse feeble and frequent. The abdomen is sunken and the temperature elevated, even though the surface is cold, clammy, and covered with a cold perspiration. In rapidly fatal cases, we have seen the temperature in the axilla reach 110° F., though the child was in a state of collapse.

Symptoms such as outlined above can not last long.

The disease may terminate fatally during the first twenty-four hours, or may continue for three or four days, the child recovering. The vomiting ceases, there is a gradual decrease in the number of stools, and a change in their character, and a slow convalescence ensues.

DIAGNOSIS.—We know of no other intestinal lesion in children with which it might be confused. The attack is readily recognized by the sudden appearance of nausea, vomiting, and diarrhoea, with large watery stools, the great prostration, and intense thirst. The high temperature and sudden collapse, with stupor, coma, and death, is a picture that, once seen, is indelibly impressed upon us.

PROGNOSIS.—The outlook in true cholera infantum is unfavorable. Cases are seen in which death is the inev-

itable issue from the very first. We have seen cases prove fatal within two or three hours after the first watery stool.

The amount of prostration, the degree of summer heat, and the existence of antecedent diseases must be taken into consideration.

TREATMENT.—The treatment of gastro-enteritis may, for study, be profitably divided into prophylactic, hygienic, dietetic, and medicinal. The prophylactic, of course, includes, in a measure, the hygienic and dietetic.

There are three considerations that stand out prominently in the prophylactic treatment of these infants; they are fresh air, proper food, which also includes regularity in feeding, and cleanliness.

Fresh air in abundance is essential in the prophylactic and hygienic treatment. In our larger cities the authorities realize this fact; hence the organization of fresh air funds, seaside homes, and the popular cry for more parks, where the children can enjoy the fresh air. These movements have tended in no small degree to lessen diarrhoeal diseases in our cities. In villages we advise that the children be kept as much as possible out of doors.

Improper feeding or overfeeding is largely responsible for these intestinal troubles. A very large proportion of them are seen in artificially fed children; hence much will depend upon the diet of the child in most cases. As a general rule, the mother's milk is preferable, and the case would be exceptional where I would recommend that it be weaned; still there are such cases. When the child has been weaned, however, we will have to take the diet into consideration. The directions heretofore given will enable us to determine whether the milk in use is good.

Next to the mother's milk, we prefer a modification of cow's milk, taking into a careful consideration all matters relating to its care and preparation. Overfeeding is nearly as frequently a cause of dyspeptic diarrhoea as is

improper food. Some mothers think that every time the child cries it must be fed, not realizing the fact that the child needs water as well as the adult, and especially so in hot weather. Scrupulous care of bottles and nipples is essential. The milder derangements of stomach and bowels should also receive prompt attention, and should never be allowed to go untreated simply because the child is teething.

The hygienic treatment includes, in addition to the directions outlined above, attention to the clothing and cleanliness of the person of the infant. The clothing should be loose and light. Light-weight flannel is commendable. If the skin is sensitive, a thin muslin or cotton garment can be placed next the person. Cleanliness of napkins is necessary. They ought always to be removed as soon as soiled, and placed in some disinfectant solution and boiled. Care in this respect, and the use of some absorbent powder, such as Lycopodium, Boric Acid, Bismuth, or Talcum, will usually prevent excoriations of the buttocks and genitals, which are at times so distressing.

A daily sponge bath with soda water we have found to be not only an antipyretic, but equally efficient to quiet nervous excitement and restlessness. Should the temperature be high, it can be repeated.

We are convinced that many cases can be relieved only by a careful attention to or correction of the diet. This is one of the most difficult problems that confront the physician. In young infants, when it seems almost impossible to so modify cow's milk so as to make it digestible, physicians instinctively resort to some of the many foods upon the market. This should not be. The foods should be selected with the same care we use in the selection of our medicines. What one child thrives upon will not suit another, and we have seen cases where none answered, and we were successful only when we succeeded in a proper

modification of the cow's milk. We may substitute for the water, barley water, wine, whey, or animal broths.

Raw or rare cooked beef will sometimes agree well with a child when it has been unable to take other food. Pickled pork will sometimes answer well, and be digested when the stomach will not tolerate lighter articles of food. The child's appetite may be gratified, and indeed it may be taken as a guide, with reference to all such things as constitute the healthy food of the country, only excepting some vegetables and fruits. In many cases of severe and persistent vomiting, we are compelled to withhold all food until the stomach is quiet.

The excessive thirst is an annoying feature of the disease, and we will be anxiously asked about gratifying it every time we see the patient. In some cases the child may have all the water it wants, even though it causes vomiting at first, for by giving drink freely in this way the irritation of the stomach is overcome. These cases, I am sorry to say, are few. The rule of practice is, that the child must be restricted to small quantities of water until the disease is arrested; it may be given frequently, however, and this is some alleviation of the thirst. In other cases, when the stomach refuses to tolerate water, we order ice, and it may be given quite freely without danger, and sometimes with benefit.

In the medicinal treatment, it should be remembered, as was said before, that the trouble is at first a dyspeptic diarrhoea, caused frequently by some irritating ingesta in the alimentary canal. This being the case, we have found it good practice, when called soon after the diarrhoeal trouble has begun, to clear the intestinal canal. For this purpose we prefer Castor Oil, when it can be borne or tolerated by the stomach. Rectal and colon irrigation have been advocated, and we have found them useful, especially so when there is much tenesmus or irritation of the lower bowel.

Cleansing the stomach is not usually necessary, although advocated by many as a routine treatment. This has usually been accomplished by means of the vomiting. In lieu of stomach washing, copious draughts of water may be used. This is called for when the ejected matter is sour and composed of undigested food.

After the intestinal canal has been cleansed, the treatment of the first form of gastro-enteritis, or dyspeptic diarrhoea, medicinally, is simplified. Astringents play no part in the treatment, and are positively harmful when given early in the disease. The same applies to the administration of opiates.

We put the child upon the use of Aconite gtt. ij. to gtt. v., Ipecac gtt. v. to gtt. x., water $\frac{3}{4}$ iv.; a teaspoonful every hour, when there is an elevated temperature, small, rapid pulse, and irritation of stomach and bowels, as shown by the vomiting, diarrhoea, and elongated, pointed tongue. If there is much griping pain, we will sometimes find Colocynth the best remedy, as — B Aconite, Colocynth aa. gtt. iij., water $\frac{3}{4}$ iv.; a teaspoonful every hour.

Chamomilla we have found a most excellent remedy when the discharges are green, the child restless and peevish. Should the stools be watery and almost devoid of color, and attended with sharp, colicky pains, we substitute for this Cupric Arsenite.

When there is a history of the child taking some indigestible food, or there are curds in the stools, there is tortina and tenesmus, and the passages contain specks of green and have a peculiar musty odor, Triturated Podophyllin should be given in 1-30 to 1-40 grain doses, repeated every four or five hours until the passages change color and become natural.

In some cases there will be nausea, not controlled with Aconite and Ipecac, and in examining the patient we will note the expressionless mouth and the pallid atonic tongue,

and Nux in small doses will be suggested until these symptoms have passed away. When the tongue is broad, pallid and dirty, the patient has Sodium Sulphite; if deep red, an acid is given. In some cases the marked periodicity in the disease calls for Quinine.

Where the discharges are light-colored, and the bowels tumid, and there is irritation and vomiting, Bismuth, either in the form of Subnitrate or Liquor Bismuth, is suggested. We prefer the Liquor Bismuth. In some cases, where the fever runs high, I have given the Veratrum instead of Aconite, and where there was much irritation of the nervous system, added Gelsemium.

Epilobium replaces the remedies above when the diarrhoea becomes chronic, and there is considerable emaciation, an enfeebled condition, and a dry, dingy, harsh skin, the abdomen is contracted, and the passages attended with sharp, colicky pains.

The treatment of the second division or true cholera infantum has been to me unsatisfactory. In the way of prevention much can be accomplished by an observance of the precautions already laid down. Especial care should be paid to every case of intestinal derangement during the second dentition and in hot summer weather.

Whatever is given, or whether anything is given, the nursing is a most important part of the treatment. Place the child in the recumbent position, and wrap the feet in dry, hot flannels, keeping a plate, stove-lid, or any heat-retaining article in contact with them, so as to keep a continued heat. If there is feeble circulation, and marked coldness of the extremities, the powdered Capsicum or Mustard may be sprinkled upon these flannels. As an application over the stomach, I prefer the spice bag, previously mentioned, consisting of *aa.* ground Allspice, Cloves, and Cinnamon, applied hot. The recumbent position should be insisted upon.

To quiet the thirst, I prefer giving small pieces of ice, or tying a piece in a cloth for the child to suck. If ice can not be had, then give cold water, a teaspoonful at a time, every few minutes. Sometimes a very little salt added to the water causes it to be retained better. When the vomiting is persistent, and the thirst excessive, I have employed an injection of salt water with good advantage. It is used in considerable quantity, and may be repeated when it passes away.

We have now to speak of *specific remedies* for this disease, and though they are not *cure-all*s, they deserve attention. When the skin is hot and dry, the pulse hard, and other evidences of a febrile condition, Aconite is the remedy. I use it in the ordinary proportion of two drops to water four ounces, but give one-fourth of a teaspoonful every fifteen minutes. The directions above as to nursing must be implicitly followed.

In an ordinary case, I order Aconite and Ipecac alternately; they are prepared for use by adding two drops of Aconite and five drops of Ipecac to four ounces of water, and give a teaspoonful every hour. They may be a little slow, but are very certain in their action.

When the face is pallid, and the mouth expressionless, the tongue pallid and atonic, Nux will serve our purpose best. It is given in quite small doses, gtt. j. to gtt. ij. to water $\frac{5}{4}$ iv.; a teaspoonful every fifteen minutes until the nausea is quieted.

In some cases we find marked irritation of the brain, and indications for Gelsemium. In others the patient is dull and stupid and Belladonna is wanted. There are cases in which the child is extremely restless, starts in his sleep, awakes frightened, cries out shrilly, and at the same time has a peculiar pinched expression about the eyes and base of the brain. The symptoms are characteristic, and the

remedy is Rhus, and when thus indicated it will quiet irritation of the stomach, and check the diarrhoea.

There are cases in which Sulphurous Acid becomes an excellent remedy; cases that require Sodium Sulphite; cases that want a simple alkali, Sodium Bicarbonate or Lime Water; and others that want Muriatic Acid. Here, as elsewhere, the indications for remedies should be followed.

When there is a soft compressible pulse, a relaxed and pale skin, and cold extremities, I have used the Quinine inunction with benefit. I think in some very bad cases it has given tone to the system, and so added to the patient's power to live as to tide over the summer to frost, and convalescence.

Fatty inunction alone answers a very good purpose. When the skin is dry and harsh, it is the best means to soften it and place it in condition for secretion. For this purpose we have recently used Olive or Cod-Liver Oil. When it is soft and relaxed, by adding a stimulant to it, and using it with friction, it is a good means to stimulate capillary circulation.

Convalescence must be managed with care, and indiscretions in diet avoided. I frequently put the little patient on the use of Syrup of Phosphates, as heretofore named, and sometimes associate it with Sodium Phosphate, three grains, three times a day.

ILEO-COLITIS.

Ileo-Colitis,—Entero-Colitis, Enteritis, Enteritis follicularis, Inflammatory Diarrhoea or Dysentery,—unlike the preceding forms of intestinal troubles, is a true inflammatory action.

Etiology.—The principal factors in the production of ileo-colitis in children have been discussed in the preceding

pages. The factors spoken of as productive of gastro-enteritis apply with equal force in ileo-colitis. The former at times pass into the latter affection without any appreciable dividing line.

The common cause of dysentery is said to be cold, yet we meet with the largest majority of the cases in the summer and autumn months, produced by indigestible food, or such derangement of the digestive process as will permit the decomposition of food and formation of irritant products. Epidemic dysentery depends upon the influence of an animal poison; what it is we do not know, nor why it acts upon this particular portion of the body.

PATHOLOGY.—Dysentery is a true inflammation of some portion of the large intestine—a *colitis*. The inflammation may involve but a small portion of the intestine, and be confined to the mucous membrane, or it may involve the greater part or all, and extend to the muscular and peritoneal coats.

The parts usually affected are the lower third of the ileum and the colon. The nature of the lesions differs, but its location is quite constant.

In the milder cases in children the inflammatory character is not marked, but rather an irritation of the mucous coat, with increased secretion, and of the muscular coat, with increased peristaltic movement, being of the nature of a catarrhal inflammation, with changes in the epithelial structure and an infiltration of the mucosa. In severer cases, the submucous structure is involved, and the infiltration is so great as to lead to an actual necrosis and the formation of catarrhal ulcers. In other cases, the force of the inflammation appears to be spent upon the lymph nodules, and possibly Peyer's patches. The lymph follicles appear as small, rounded elevations, on the top of which appear small pits. These ulcerations do not attain the

size of those occurring in a catarrhal inflammation, nor do they so completely destroy the mucous membrane. In the follicular form of inflammation just described, the mucous membrane presents a peculiar pitted appearance.

SYMPTOMS. — In acute dysentery of the child, if the onset is sudden, there is often vomiting, pain, fever, and it is noticed that the bowels are moving too frequently, and there is considerable straining at stool. The discharges, however, are feculent with undigested food, though small, but if noticed closely they will look slimy, and are greenish or yellowish in color, and after a day has passed they will be almost pure mucus, or mucus tinged with blood, preceded by pain and accompanied with tenesmus.

As the dysenteric character of the discharges becomes marked, febrile symptoms appear. The child is restless and uneasy, the skin is dry, the pulse is accelerated and hard, the appetite impaired, and indeed all the functions of the body deranged. These symptoms vary greatly in different cases — in some the fever runs as high as 103° to 105° , in others it is hardly noticed. The tongue, at first coated, becomes dry and cracked, and the lips parched.

But as the disease progresses the discharges become more frequent — every fifteen, ten, or even every five minutes; they are preceded by pain, and attended with tenesmus, and composed principally of mucus and blood. When feculent, they are larger and are not so frequent. They are also more frequent during the day, indicating that feeding and handling the infant increases the action of the bowels. This straining at stool is so marked a feature with the child, and so strongly expressed in its countenance, that it is an index to the character of the disease as soon as seen.

The straining and tenesmus frequently produces pro-

lapsus ani, which, though easily reduced, recurs with each passage, and adds materially to the distress. Day by day the child loses strength, and the general and local disease seems to gain intensity, until the fifth or sixth day; then there is a gradual amendment, until convalescence is completely established.

The first indication of an improvement is the disappearance of blood from the stools, which also become less frequent. With these changes there is less pain and tenesmus. Yet the diminution in the number of stools is not always a good sign, for, when accompanied by a rise in the temperature, it is a bad omen.

Several varieties of ileo-colitis have been described, namely, the catarrhal, follicular ulcerative and the membranous. It is unnecessary to describe these at length, as the clinical history of all presents much in common. The main difference is in the pathological changes in the intestines and the severity of the symptoms.

The follicular ulcerative usually follows one or more acute attacks of the catarrhal form, and is noted chiefly for its duration, and the extreme and progressive emaciation. The diagnosis is formed by the symptoms taken collectively, rather than by any that are pathognomonic.

The membranous is the gravest form of intestinal inflammation, and is severe from the onset. The temperature is uniformly high, the nervous system profoundly impressed, there being delirium and stupor. The abdomen is swollen and tender. Blood is constantly present in the stools, but the only positive element of diagnosis is the finding of shreds of membrane in the stools. Many cases present marked nervous symptoms. The child may be peevish, irritable and restless, or there may be stupor and coma. The latter condition usually follows the former. The loss of weight, while not so rapid as in cholera infantum, is more progressive, and as emaciation goes on, the skin

hangs loosely on the thighs and abdomen, and can be pinched up in large folds. It is dry and scaly, or doughy. Erythema of the anus, nates and genitals is quite common. It may be superficial or deep.

Stomatitis is also a frequent complication. It may assume either the form of an aphthæ or thrush.

DIAGNOSIS.—The diagnosis of ileo-colitis is made with ease. The pain, tenesmus and the character of the stools are significant. Intussusception may be mistaken for an ileo-colitis. In the former, the diarrhoea is soon succeeded by an obstinate constipation, and by stercoraceous vomiting and collapse.

PROGNOSIS.—The prognosis will be based upon the time of the year, the condition of the child's nutrition and its surroundings. It is usually good, though, occurring early in the season, relapses are frequent. The symptoms which render it doubtful are, continued high temperature, frequent vomiting, rapid wasting, a large amount of blood in the stools and severe nervous symptoms.

TREATMENT.—Ileo-colitis is managed much in the same manner as the disease preceding. All that has been said heretofore relative to prophylactic and hygienic treatment applies with equal force in the present instance. The dietetic treatment will prove a source of much care and annoyance.

We wish we could formulate a set of rules that would prove applicable to all cases, but it is impossible. Each case is a study of itself. The great consideration is to provide a food that will leave but little residue. We have tried the malted foods, yet they at times seem to increase the action of the bowels. Each case must be studied; and, although we at times turn instinctively to the artificial foods, they have to be selected with judgment and care. We have met with cases that would tolerate none of them.

During the acute stage, food must be withheld or given with care, gradually returning to a full diet. As relapses are frequent, care must be exercised throughout the entire heated term.

In the mild form of the disease, my practice resolves itself into the administration of Aconite with Ipecac in the usual doses. The general bath is used, and the hot foot-bath, and the child is kept still, and in some cases a cloth spread with lard or mutton suet is applied over the abdomen. The treatment is very simple and very satisfactory.

When there is persistent abdominal pain or tormina, I like the action of Colocynth, in the small doses heretofore named. In some cases Veratrum may be used, and if there is evidence of determination of blood, Gelsemium is given with it.

In some cases the broad, pallid and dirty tongue calls for Sodium Sulphite, and it is given in doses of from two to five grains every three hours until the tongue has cleaned. Sulphurous Acid is an excellent remedy in typhoid dysentery, the tongue being red and full, and covered with a nasty glutinous coat.

If in a malarial region, we look carefully for periodicity, which will be found in many cases. Here Quinine is an indispensable remedy, the patient being prepared for it, and it is given in the usual doses.

In dysenteric irritation we find a very stubborn case, and one that sometimes refuses to yield to remedies, literally wearing out. I place most dependence upon the continued use of minute doses of Aconite, for several days; next upon the use of the Subnitrate of Bismuth. Occasionally we find a case in which there is evident relaxation of the rectum, with congestion, and in such Hamamelis will prove very good.

The local means will consist of cold packs to the abdomen, the disease being sthenic and the patient carrying a

high temperature; or hot packs, or sponging of the abdomen, if the disease is of a lower grade. In some cases a hot sitz bath gives relief, and the patient has rest and sleep for a few hours.

In some cases we are obliged to use enemata to get rest for the inflamed bowels and exhausted patient. Sometimes water as warm as it can be borne serves a good purpose, but usually we think of Tinct. Opium gtt. v. to x., starch water 3ij. to 5ss.—this is repeated after each evacuation.

Frequently we find it good practice to preface the internal administration of our remedies by a thorough cleansing of the bowels by the administration of Castor Oil or enemas.

TABES MEENTERICA.

Tuberculous disease of the intestinal canal is most usually met with in childhood, though occasional cases will be seen even up to the age of twenty-five.

ETIOLOGY.—It occurs in a variety of conditions. At times secondary to a severe intestinal catarrh, or in those constitutions which we have before referred to as being tuberculous, and where there is a general tubercular infection. The nodes are usually infected from the intestines. Considerable has been said and written upon infection from milk, and, while this is possible, it is generally admitted to be rare.

PATHOLOGY.—Tuberculosis of the intestines usually affects the small intestines; rarely the upper portion of the colon also. When a post mortem is held early, there are found tubercular deposits, widely scattered and involving the lymph nodules or Peyer's patches. They usually appear as small yellow nodules. Ulcers are also present, through which infection is supposed to have taken place.

These vary much, both in size and number. They are irregular in shape, with rounded borders and overhanging, infiltrated edges. Their surface is covered with granulations. When healed, or partly so, they cause a distinct puckering of the intestines. They involve the mucosa, submucosa and muscular coats, according to their size and depth. When at all severe, there is usually associated a tubercular peritonitis.

The changes in the lymph nodes are the same as those which take place in the lymph nodes in other portions of the body. It is an inflammation, caseation, softening, and abscess or calcification. The process has been referred to at length elsewhere. The nodules may be small, or attain considerable size, through the fusion of several smaller ones. Pressure upon the abdominal blood-vessels may cause dropsy of the lower extremities or an ascites.

The process, while usually tuberculosis, may be, as was elsewhere said, the result of an exhausting diarrhoea and malnutrition.

SYMPTOMS.—The main features of every form of *tabes mesenterica* are atrophy and a tumid abdomen. In children it is usually preceded by diarrhoea and gradually increasing prostration. The appetite is usually good, sometimes ravenous, but the patient receives no apparent benefit. The bowels are sometimes tumid, hot and tender, at others very much shrunken; the evacuations consisting of a thin mucus, greenish, and frequently resembling the washings of meat; are fetid, and usually the result of an intestinal catarrh. The countenance is contracted and pinched, the eyes set far back in the head, and the skin peculiarly dry, wrinkled, and sallow, giving the child a prematurely aged appearance. It is restless, irritable, and fretful, and presents many of the symptoms of cholera infantum.

The emaciation and atrophy reach a degree seldom met with in any other morbid condition. The skin is loose, flabby and inelastic, hanging upon the limbs like a bag, and when pinched up between the fingers remains raised. The cutaneous veins are distinct and blue, being especially prominent upon the chest and abdomen. The voice has a peculiar sound, and the cry is tearless. The pulse either slow from exhaustion, or rapid and compressible. Owing to the general atrophy, the abdomen appears unduly large and prominent, and, with the enlarged veins, presents a striking picture. Careful palpation reveals the nodules or lumps of different sizes and shapes. Percussion shows tympanitis over the abdomen and flatness over the tumors. Care should be exercised to exclude the liver and spleen, which are also frequently enlarged.

DIAGNOSIS. — Tabes mesenterica is diagnosed with difficulty. The principal symptoms leading us to believe the disease of the mesentery is tubercular are: the continuance of a good appetite, and seemingly good digestion, with continually increasing loss of strength and flesh, and the evidence of disordered bowels, and in the latter stages feeling the enlarged mesenteric glands through the abdominal walls, and a general tubercular infection. It will be seen that our diagnosis will have to be made principally by exclusion — a very common method, and possibly more correct than by direct symptoms.

PROGNOSIS. — The prognosis in well-marked cases of this disease is exceedingly unfavorable, as much so as any disease we are called to treat. In the earlier stages its progress may be arrested, as it may also occasionally in the latter, when it is the result of an exhaustive diarrhoea. Among the unfavorable features are: a general tubercular infection, high temperature and extreme exhaustion.

TREATMENT.—A tonic and restorative treatment would seem to offer the best results in these cases. Yet we find that it does not always prove so serviceable as some other means. In other words, it is dietetic and hygienic. The same rules and injunctions regarding artificial feeding and the care of the child enjoined in preceding chapters and in diarrhoeal diseases apply here. The prophylactic treatment is the proper care of the baby as to diet and bathing. The principal feature needing medicinal attention is the diarrhoea. For this, small doses of Ipecac, alternated with Aconite, may be employed to relieve the irritation of the bowels and check diarrhoea, when there is the elongated, pointed tongue, with reddened tip and edges, and an elevated temperature.

Nux will be substituted for the Ipecac when there is a pallid mucous membrane and an atonic condition of the muscular structure. When the stools are green and watery and the child peevish and fretful, Matricaria is the remedy. Rhus tox. is frequently called for by the sharp, shrill cry, pinched expression of countenance, red tongue, with enlarged papillæ. When there is oedema of the limbs or ascites, Apocynum should be used. A general enlargement of the glands calls for Phytolacca.

As remedies for the general nutrition and for tubercular deposits, Arsenic, in the form of Fowler's Solution, is used when there is a pale, oedematous skin, flabby muscles, soft, feeble pulse, and cold extremities.

Hypophosphite of Lime is a good remedy, as is the Compound Syrup of the Hypophosphites, when the skin has a pale and waxy appearance, nutrition is feeble, there is a cough, and the extremities are cool.

Cod-liver Oil has given very good results when it could be taken well and digested. It is indicated when there is cough. The tissues are soft and atonic, frequent pulse,

increased temperature, lymphatic enlargements, paleness and emaciation. It may also be used as an inunction.

In some cases a good preparation of Malt, taken after the foods, aids in digestion, and the child will improve on it.

The general inunction with Quinine once a day and the use of the Polymnia ointment to the abdomen are recommended.

CONSTIPATION.

Constipation is an attendant on many acute diseases, and is generally to be regarded as a favorable indication, though we have to use means to overcome it. It is also met with as an idiopathic affection, and it is this form that we wish to consider.

It is a relative rather than a definite term, and is applied to those conditions where the stools are less frequent and harder and drier than normal. Just what is the normal condition, in each individual case, it is somewhat difficult to say. Infants usually have two or more movements a day; some only one. If they be in a normal condition, the child is not constipated. Other cases may have two or three small, hard and dry stools a day, when they would be considered constipated and treated accordingly.

ETIOLOGY.—The causes of constipation are many. Chief among them are diet and an atonic condition of the muscular structure of the intestines. Insufficient muscular contraction of the intestines, or a sluggish condition, and a diminution of the secretions from the glandular apparatus associated with digestion, may be a cause. In the latter instance, the faeces are hard, dry, light-colored, and associated with flatulence.

Food containing but little residue is also a cause, by reason of the insufficient volume; and, vice versa, food

containing a large amount of residue, by overstimulation and consequent atony, may induce the same condition. It may also be caused by local causes, such as fissures or hemorrhoids, by reason of the pain caused by having a stool. This is, however, a rare condition in children.

Diet causes by far the greater number of cases. In breast-fed children, the mother's milk may contain an excess of proteids and a lack of fats, which disparity must be supplied by dieting the mother.

In artificially fed children, both the fat and the proteids may be too low, or the latter too high. This is obviated by the addition of cream and barley water, or by cream and water. We have also seen it caused by sterilized or boiled milk. Factors productive of muscular atony are: rickets, want of muscular exercise, and severe diarrhoeal diseases.

In some cases it seems to be dependent upon constipation of the mother, the acquired vice in her constitution manifesting itself in the condition of the child. In some others it is dependent upon the character of her food; but often we can give no reason for it, and we have simply the fact that constipation exists.

SYMPTOMS.—Sometimes the constipation is attended with uneasiness in the abdomen and colic; but in the majority of cases the child does not suffer at all, but nurses well, and thrives like other children, and were our attention not called to it by the mother, we would not suspect anything wrong. In some cases the child will make forcible efforts to stool, and may pass a small portion of hardened faeces at such times, or nothing may pass. Such attacks of tenesmus may come on three or four times a day, and are very unpleasant. The straining may cause the passage of mucus and blood.

In obstinate cases, some nervous symptoms may result from the absorption of toxic materials. They are head-

ache, dullness, fretfulness, disturbed sleep. There may be also distended abdomen, furred tongue, and offensive breath.

In some cases of constipation there may be even a slight diarrhoea, and, in fact, may be treated as such. It is said the hardened faeces, acting as an irritant, produces a fluid secretion, which passes between the intestinal walls and the faecal mass.

DIAGNOSIS. — The diagnosis will not be difficult. The difficulty exists in ascertaining the cause and the seat of the trouble. To do the former, a thorough investigation of the diet and habits are necessary. For the latter, an enema or suppository will decide whether it be in the rectum or not. The color and character of the stools will also assist in a determination of the seat of the trouble.

PROGNOSIS. — The prognosis will depend upon the cause and the ease with which it is removed. We have seen convulsions caused by constipation, when we were assured the bowels were regular. Convulsions we always fear, no matter how slight the cause.

TREATMENT. — If the mother is of a constipated habit, we will be more successful in removing the torpor of the child by such means as will restore normal activity to her, rather than by giving it medicine. The means we commonly employ are: that, on first rising in the morning, a glass of cold water be taken, adding to it one or two drops of Nux Vomica; that the abdomen be thoroughly rubbed with the hand dipped in salt water; and that a regular time be set apart (immediately after breakfast is best) to evacuate the bowels. Should this not be sufficient, ten or twenty grains of Sodium Phosphate may be taken in a glass of water, on going to bed.

If treatment must be directed to the child, one of the

best means is the establishment of regularity of habit in the child. We understand this means care, but we have seen very young children trained by constant attention and care. If necessary, an occasional suppository can be used to assist.

In conjunction with the former, or even alone, the diet must be looked after. We have called attention, in the etiology, to the deficiency in the fats, which may be increased by the addition of cream. If there be much proteids, we decrease the same by the addition of water to the milk. In older children the dietary may be increased by the addition of meats or beef juice, fruits without small seeds, and a few vegetables. The cereals eaten with cream sometimes assist. Some cases can be cured by giving the child more water. It is a mistake to give food every time the child cries; many times water will suffice, and is what is wanted. Some simple syrup or molasses added to the water will help constipation. The Soap and Glycerine Suppositories are frequently used, but should be used only to assist for the time being. The latter is too irritable for use any length of time. Neither should enemata be used regularly. Their constant use necessitates an increase in the amount needed for relief. Massage is good and useful in conjunction with any of the means mentioned above, and it is well to combine it with the above, or with the medicinal measures employed.

As remarked above, the medication of children to overcome constipation is not very successful; sometimes we will accomplish the object, at others we will be partially successful, and in others we will fail entirely. Sodium Phosphate, in doses of two or three grains, three times a day, will occasionally answer the purpose, and the influence is usually permanent, especially in rachitic children. Small doses of Belladonna may also be given, with the expectation of good results in some cases, owing to its action on

the capillary circulation overcoming torpor and congestion. It is often combined with other purgative drugs. In those cases where the abdomen is relaxed and pendulous, with a torpid circulation and insufficient muscular contraction, small doses of Nux Vomica will answer the purpose; and where the liver is inactive, Leptandrin, thoroughly triturated, may be given in doses of one-fourth to one-half grain.

Podophyllin 2x. trit. xxx. grains, with molasses or a teaspoonful of brown sugar in half a glass of water, the child to take a teaspoonful three or four times a day, is of value when there seems to be a deficient glandular secretion, as shown by the hard, clay-colored stools. Of the newer drugs, Cascara Sagrada, used in the form of an elixir, or the aromatic syrup, seems to have the widest range of usefulness. It possesses the advantage of not leaving the bowels in a constipated condition. The dose usually has to be diminished, rather than increased.

Many other remedies may be used for relief, but, as we have said previously, the best method is to attempt the cure by diet and hygienic methods.

INTESTINAL OBSTRUCTION.

Intestinal obstruction is a mechanical impediment to the passage of the contents of the intestines. It may be caused by congenital malformations, such as imperforate anus, absence of the rectum, or atresia of the intestines. Other causes not congenital are foreign bodies, volvulus, or a twisting or knotting of the intestines, strictures, faecal impactions, strangulation and intussusception. When it occurs suddenly it is termed an acute obstruction. If of gradual development, it is said to be chronic. A chronic obstruction may suddenly develop acute symptoms, or an acute one become chronic.

These several conditions have many symptoms in common, and, while the diagnosis of intestinal obstruction is not a difficult one to make, it is at times very difficult and often impossible to differentiate the cause.

FÆCAL OBSTRUCTION.

This form occurs at any age, and is probably the result of a lack of tonicity in the muscular walls of the intestines. The colon or rectum is usually the seat of the obstruction. Owing to the obstruction, the colon may become enormously distended with gas and faeces. The mass may become channeled and allow a small amount of faeces to pass, until the obstruction finally becomes complete, when the symptoms of acute obstruction arise. Occasionally the hardened mass may be felt through the abdominal walls by palpation, or, if it be in the rectum, by a digital examination.

FOREIGN BODIES.

It is surprising what children will swallow, either intentionally or accidentally. These may cause obstruction, either by their bulk or by irritation cause an inflammation and tumefaction that gives rise to the symptoms of an obstruction. The symptoms are vague and ill-defined, and the diagnosis difficult. The history of the case affords some valuable information. The most prominent symptoms are colicky pains, inflammation of the bowels, and general peritonitis; faecal vomiting and collapse coming on later.

VOLVULUS.

Volvulus is a twisting of the intestines, and is a rare condition in children. Its most common seat is at the sigmoid flexure, and it is associated with a relaxed and

usually seen in the course of the ascending and transverse colon. This is livid, ecchymotic, and shows evidence of changes. These changes will vary with the length of time elapsed since the invagination took place. Exuded lymph glues the mass together. If the obstruction has existed long enough, the blood supply is cut off, and the mucous membrane sloughs and is found of an ashy color, or even gangrenous. It is claimed it is the traction on the mesentery that leads to the obstruction of the blood-vessels.

This in turn causes congestion, oedema, hemorrhage, and even gangrene. It is also one of the causes of the irreducibility, by reason of the resulting swelling. After the fourth or fifth day adhesions form.

SYMPTOMS.—The onset is sudden. The initial symptoms are pain and vomiting. The pains are at first colicky and paroxysmal. They increase rapidly in severity, and lose their paroxysmal character. The vomit at first consists of the contents of the stomach; it is then bilious, and finally faecal. The abdomen is soft, and not tender, until the changes due to congestion and peritonitis begin. It then becomes distended, tympanitic and tender. There are usually one or two loose faecal passages, followed soon by passages of blood or blood and mucus. If the tumor be in the rectum, there is tenesmus, and after the first few passages the constipation becomes complete, neither gas nor faeces passing. Prostration and collapse soon result. The face becomes pallid, and has an anxious expression. The eyes are sunken, and the skin is covered with a cold, clammy sweat. The pulse is rapid and weak, and the temperature, at first normal, becomes subnormal as the symptoms of collapse progress. It only becomes elevated if the condition exists long enough for peritonitis to appear. In more than half of the cases it is claimed that a sausage-shaped, doughy and inelastic mass can be felt in the right iliac region or in the rectum.

DIAGNOSIS.—The symptoms are characteristic. The sudden onset, colicky pains, frequent vomiting, bloody and mucous stools, and prostration are diagnostic signs which point to the condition. This becomes a certainty when the tumor can be felt.

TREATMENT.—Whatever is done for these cases must be done promptly. Purgatives must be avoided in all of them. They tend only to increase the peristaltic action, intensify the misery of the patient, and hasten collapse. When a foreign substance has been swallowed, the patient ought to be given food that will contain much solid residuum, such as oatmeal or mashed potato. The latter is especially valuable when some sharp body has been swallowed. Usually the patient has already resorted to various measures, with the object of moving the bowels, and has thereby partially exhausted their muscular fibers.

The most effective method of reducing any obstruction, save volvulus or an internal strangulation, is by the use of large enemas of water or the insufflation of air. Personally we prefer the former method. These methods may be practiced either with or without anæsthetics. A good fountain syringe should be elevated from three to four feet above the patient, and the hot water allowed to fill the intestines. It should be retained as long as possible. Many invert the patient, claiming that the water thus flows higher. When the obstruction is high in the intestines, we should have attached a colon tube, or, in lieu of this, a soft rubber catheter, to the nozzle of the syringe. While using the enemas assistance may be rendered by gentle ~~taxis~~ over the abdomen. Care should be exercised even in this, as ~~taxis~~ ought not to be used unless the obstruction be recent.

Inflation is used by means of a small hand bellows. It is claimed for it that it penetrates the ileo-cæcal valve more readily than does water. It is more difficult to gauge the

pressure than by water, and too much force must not be used, lest rupture of the intestines occur. It is also said that it is more readily determined by this method when reduction has taken place, by the disappearance of the tumor, the hand being kept on it while the inflation is taking place.

Too much time must not be wasted in these attempts at the removal of the obstruction. If we are not successful after a few trials, laparotomy should be performed. The earlier it is performed, the better are the chances of success. Nothing will succeed when the patient is in extremis before calling the aid of a surgeon. In fact, this is the only means by which a volvulus or internal strangulation can be relieved. The technique of the operation belongs properly to works on surgery, to which the reader is referred.

APPENDICITIS.

Appendicitis is an inflammation of the vermiform appendix. The term is applied at present indiscriminately to any inflammation in the right iliac fossa, thus including what was formerly called typhilitis, perityphilitis, paratyphilitis, or perityphilitic abscess.

ETIOLOGY. — Appendicitis occurs at all ages. It is most frequent in males. The majority of cases occur between the tenth and thirteenth years, though quite a number are reported in children younger, even as young as one year of age.

The exciting cause is some foreign substance, usually a faecal concretion, which produces a mechanical injury to the mucous membrane of the appendix or cæcum. A fall, blow, strain, or some accident may be the exciting cause. Chronic constipation seems to play an important role as a predisposing factor. Typhoid and tubercular ulceration

sometimes lead to an appendicular perforation. This is a rare condition, however.

PATHOLOGY.—The disease is described as existing in two forms, the catarrhal and ulcerative or perforative. The first is a catarrhal inflammation of the mucosa, submucosa and serous layers. There is thickening of the walls, due to an infiltration of the coats with cells. The appendix may be distended with mucus or pus. This condition gradually recedes, leaving the appendix weakened and subject to renewed attacks of inflammation, or it may result in the ulcerative form. In this form the inflammation results in the gradual production of small perforations by ulceration, or the inflammatory products may so distend the appendix as to result in gangrene and the production of a large opening. Adhesions may form as the result of the inflammation, between the appendix and neighboring organs, and the opening takes place into the intestines or rectum. If into the general peritoneal cavity, the result is a peritonitis. If it open into the right iliac fossa, adhesions form, and the result is an abscess. One case seen by the writer opened in the right lumbar region. The most favorable is an opening into the rectum or intestines. The variability of the position of the appendix accounts in some degree for the variability in the location of the abscess.

SYMPTOMS.—No matter what the form, whether catarrhal or ulcerative, the attacks usually begin with intense localized pain in the right iliac fossa, local tenderness and fever. The most sensitive point is about midway between the anterior superior spine of the ilium and the umbilicus (McBurney's point). From this point the pain radiates in different directions, and it may be attended with exacerbations. Nausea, vomiting and constipation are present in the majority of cases. The pulse and tempera-

ture are elevated. There is rigidity of the abdominal walls, and the right leg is flexed to relieve the tension. If the case proves to be one of simple catarrhal appendicitis, the symptoms continue for two or three days, then gradually subside. In children the symptoms may not be so marked, and their form may be so indefinite that a diagnosis is impossible.

If after two or three days the symptoms do not subside, the disease will progress to ulceration and perforation. The symptoms of perforation are sudden and acute, lancinating pains in the right iliac fossa, persistent vomiting, chill and prostration.

The disease will progress in accordance with the location of the abscess or the escape of the pus. Protective adhesions may form. There is localized oedema, and a doughy mass is felt at the seat of the pain, which gradually assumes some shape. There are fever, chills and symptoms indicating the formation of pus. Some improvement in the general symptoms may now occur, but the temperature does not become normal. An abscess forms, which is to be relieved by aspiration or incision. When the perforation occurs before protective adhesions have formed, the pus will escape into the peritoneal cavity, and a general peritonitis results. The symptoms are then a chill and continuous vomiting. The tenderness and pain become diffuse over the entire abdomen. The pulse is very rapid and weak, the temperature elevated, abdomen distended, tympanitic, and the symptoms of collapse soon appear. This is the most serious termination, and is the one which usually occurs in all fatal cases. The duration of the disease is from two to seven days. It may be prolonged considerably beyond this period. Especially is this the case when adhesions form and the pus escapes outwardly and in unusual localities.

DIAGNOSIS.—The diagnosis is not, as a rule, attended

with much difficulty. The sudden, severe pain, situated in the right iliac fossa, and localized tenderness; the vomiting and fever are characteristic. Associate with these the tenseness of the abdominal walls and the flexure of the right leg to relieve the pain, and the diagnosis becomes a fact.

PROGNOSIS.—This must be guarded. Cases of the catarrhal form get well, but we can not always be assured that the disease will not terminate in perforation. If adhesions occur, and the opening be extra-peritoneal, the case usually results in recovery. If the septic material empties into the general peritoneal cavity, the cases usually terminate fatally.

TREATMENT.—Considerable difference of opinion exists among medical men whether this should be considered as a medical or surgical disease. We believe it to be both. We are positive cases occur which can only be relieved by the surgeon, and belong to his domain from the first. We know many cases recover permanently without his aid, and again, cases which were medical in the beginning, will ultimately require his aid. We do not believe that every case is surgical or should be operated upon. Absolute rest in bed is imperative in all cases. Hot applications should be continuously applied over the iliac region. Active purgation should be avoided. If it seems necessary to move the bowels, enemas of hot water should be used. The patient may also have small doses of Magnesia Sulphate every two or three hours. This usually keeps the bowels moving all that is necessary. Opium or Morphine should be avoided, unless rendered imperative by the acuteness of the pain. They tend to lock the bowels and mask the symptoms. We prefer to rely upon the hot application to relieve the pain. The diet should be liquid, but milk avoided. Meat broths or soups are preferable.

In addition to these means, many remedies may be called for, as the disease presents a wide variety of symptoms. We can only notice a few.

Aconite or Veratrum, for the elevation of the temperature; Nux. Dioscorea, Colocynth or Cannabis, for the pain. With the formation of pus, even though surgical means be employed for its evacuation, Echinacea, Echafolta, Baptisia or Calcium Sulphide. When the symptoms do not soon subside, but rather increase in severity, when a distinct mass can be felt in the right iliac fossa, and there is localized œdema, when symptoms of general peritonitis appear at any time in the disease, the aid of a surgeon is required.

PROLAPSUS ANI.

Prolapsus ani is a protrusion of a portion of the rectum through the anus. We may recognize two varieties of the disease: In the one there is this failure of the sphincter, and the entire bowel is permitted to descend, yet retaining its natural relation. In the other, the connective tissue between the mucous and muscular coats is relaxed, or has given way, and the mucous coat is extruded through the sphincter, which grasps it tightly. In this case the bowel seems as if turned inside out, or invaginated.

Etiology. — Prolapsus ani is met with most frequently from the age of two to four years, though it is sometimes seen during the first months of life. It comes on slowly, but as it is not noticed in its early stages, it seems to the mother as if it had wholly developed within a few hours.

In almost all cases there is a softness and relaxation of the perineal tissues, which will be noticed as soon as the child is examined. In some the sphincter ani seems mostly at fault, having so lost its power of contraction that it is not able to support the bowel.

This is not always a pleasant job, yet it can be accomplished, even when considerably swollen, if care is used and the physician has patience. Have a soft cotton or linen cloth spread with lard, and place upon the protruding gut, the little patient being upon his hands and knees, or more frequently lying across its mother's lap, face down, and feet depending. Now, placing both hands so that one or two fingers may rest on the gut, the other fingers and thumb press upon the perineum in such direction as to relax it. Gentle and continued pressure being made upward, in a short time reduction is effected.

When not readily reduced, the application of cold cloths or ice water is of assistance. When there is a tendency to prolapse with every stool, care should be exercised at the time. Pressure upon the buttocks during defecation, reclining posture and quiet for at least one-half hour afterward materially assist.

If there is constipation, it must be treated by laxatives. If there is a diarrhoea, with tenesmus, it should be treated and the parts sponged with cold water or an astringent after each stool. In more severe cases we have used the T-bandage and a pad over the anus. In cases with tenesmus and straining, resort to suppositories of Opium, in order to quiet the irritability.

For the radical cure, if the case is mild, we direct that the part be washed with Hamamelis, and that it be given in doses of five or ten drops three times a day; or, in place of this, we may give the Collinsonia in doses of one drop three times a day.

In some cases small doses of Nux, where there is muscular weakness; in others, of Colocynth, where there is straining and tenesmus, will relieve the tenesmus that causes the prolapse, and will strengthen the lower bowel and femoral muscles.

In severe cases, when of long duration, we use the Per-

sulphate of Iron as a local application. In most cases one part of the solution to two or three parts of Glycerine will be as strong as it can be borne, but in others it may be used of full strength.

The hypodermic injection of Ergotin near the sphincter has given excellent results in cases otherwise incurable, as has also the injection of Strychnine.

INTESTINAL WORMS.

The presence of worms in the intestinal canal is not always attended by symptoms of disease; indeed, children may enjoy very good health while infested with these parasites. It has been claimed that an entirely healthy person will not have worms, as that an entirely healthy and well-taken-care-of child will not have *pediculi*. I think this is true to the extent that the naturally healthy child will not suffer from them, and not furnishing a comfortable home, they are not likely to remain.

A depraved condition of the intestinal canal, with increased mucous secretion, seems to furnish the conditions necessary to the propagation of worms, and as digestion is necessarily interfered with by this condition, there will be more or less impairment of the general health.

Etiology. — In olden times it was thought that there was *spontaneous generation* of worms, and there are some who yet hold to this opinion. The fact is, there is no *new creation* in this world; every organized body, from the simplest cell or monad to the highest animal life, being the product of parents which possessed the same form and functions. Intestinal worms, therefore, have a parentage, and are propagated only from the same species.

Cestodes (Tapeworms). — All forms of the cestodes or *taenia* are introduced into the body by the ingestion of some form of food containing the larvae (*cysticerci*).

There are several varieties of the tænia found in the intestinal tract. Some seem to have a geographical boundary.

(1) *Tænia Solium*, received from eating raw or rare pork, is most frequently seen in Germany.

(2) *Tænia Mediocanellata*, derived from beef, and is the species most frequently seen in children. It is more common in America, England and France.

(3) *Tænia Bothriocephalus Latus*, derived from fish, and seen most frequently in Norway, Sweden and Iceland.

(4) *Tænia Cucumerina*, said to be produced from the lice of dogs and cats, and thence conveyed to man by the hand. This form is also seen in infants.

The tænia are oviparous, producing eggs from which the worms are developed. The development, however, requires two animals of different species, in one of which the worm attains its *pupa* state, and in the second attains its perfect development. The process is very much like the development of a butterfly — from the egg to a grub, from that to a fully developed insect.

Kuchenmeister traced the *tænia solium* from the *cysticercus* of the pig, through all its gradations up to the fully formed worm. These cysticerci are very tenacious of life, and may get into the intestinal canal by eating raw or partially cooked fresh pork, or even bacon.

When once introduced into the human body, a new development commences, and from these small, grub-like bodies are produced the perfect tapeworm in from three to four months. Each joint of one of them contains a multitude of eggs, which, being discharged with the intestinal contents, regains its original habitat, the hog, and develops into a cysticercus, which in turn by transplantation becomes a tænia. Thus from the fully developed worm in the human intestine is thrown off the eggs, which, being taken by the hog with its food or drink, gains access to its tissues

and is developed into the cysticercus or grub, and this, being eaten by men, produces the perfect worm; the shell of the cell being dissolved by digestion, frees the cysticercus, which fastens itself to the mucous membrane and develops into the worm.

This being the origin and mode of development, we find that certain sections of country are *verminous*, while others are comparatively free. This has been remarked in case of the tapeworm, and I think it just as well established with the other forms. When the conditions are favorable for the reception of the discharged ova in water or food, we will find that intestinal worms are common, and where these do not exist they are rarely seen.

The *taenia solium*, or long tapeworm, is described by the same author as "having long and narrow articulations, with marginous pores, by which it attaches itself to the intestines; one on each joint, generally alternate; ovaries arborescent; head with a terminal mouth, surrounded with two rows of radiate hooks or holders; and a little below, on the flattened surface, four tuberculate orifices, or suckers, two on each side; it is from thirty to forty feet long, and has been found sixty. It inhabits the intestines of mankind, generally at the upper part, where it feeds on the chyle and juices already animalized. It is usually solitary, and adheres so firmly to the intestines that it is removed with great difficulty. It is said to have the power of reproducing that which has been broken off; but this assertion wants proof. The animal is oviparous, and discharges its numerous eggs from the apertures in the joints." The articulations are from four to six lines in length, and nearly as much in width, and resembles gourd or melon seeds.

"The articulations of the broad tapeworm are short and broad, with a pore in the center of each joint, and stellate ovaries around them; body broader in the middle, and

tapering toward both ends; head resembling the last; inhabits the upper part of the intestines, and feeds on chyle; from three to fifteen feet long; usually in families of three or four."

SYMPTOMS.—As regards the symptoms of tapeworm, they are very deceptive. In one hundred cases recorded by Seeger, in sixty-eight instances nervous affections, or general or partial convulsions, occurred—epilepsy, hysteria, abdominal spasms, convulsive cough, dyspnœa, melancholy, and hypochondriasis; in forty-two, various pains in the abdomen; in thirty-three, disordered digestion and irregular states of the evacuations; in thirty-one, irregular appetite and voracity; in nineteen, habitual or periodical hemicranias; in seventeen, sudden colic; in sixteen, sensations of undulatory movements in the abdomen up to the chest; in fifteen, vertigo, delusions of the senses, and defects of speech; and in eleven, shifting pains in various parts. The only definite evidence of the presence of tapeworm is the passage of portions of it with the faeces, and as this usually occurs with this worm, the non-appearance of the joints in the evacuations during a considerable time may be considered as good evidence that the worms do not exist in the intestinal canal.

TREATMENT.—Tapeworm is of very rare occurrence in childhood, and is possibly never met with during the first two or three years, or while they are on a milk diet. The prophylactic treatment is simply the avoidance of rare or uncooked meats. The mildest treatment will be best here, and we would recommend the emulsion of *Pumpkin Seed*, or the oleoresin of male fern. The emulsion is made by depriving two ounces of the seed of their capsules, and beating them into a pulp, with sugar and water; this is the dose for an adult, and is taken upon an empty stomach, in the morning, having fasted the previous day and moved the bowels by a purgative; and is followed in from two

to four hours by a full dose of castor oil. The Oleoresin of Male Fern is also taken, fasting, the dose being from gtt. xx. to 5j. in mucilage of milk, or capsules.

The most effective means for the removal of tapeworm is a decoction of the Pomegranate Bark, made by adding one-half pound of the bark to four pints boiling water, and boiling down to one pint. This is given in five or six doses, with the addition of some cathartic. The patient is prepared in the same manner as before. This frequently produces nausea, hence the patient must be kept quiet.

Pelletierine Tannate is lately advised, and by some is considered preferable to the above. It can be given in one dose, and is not so nauseous. Turpentine and Chloroform are also advised.

NEMATODES.—The two most common forms found in the child are the *Ascaris Lumbricoides*, or long, round worm, and the *Oxyuris Vermicularis*, pin, or threadworm.

The subject has been carefully studied for many years by Kuchenmeister, a very persevering German physician and naturalist, and the facts are very clearly established. The two varieties of *ascaris* and the *trichocephalus* are produced directly from ova taken into the intestinal canal, which, finding the conditions for incubation, are developed into the fully formed worm. Previous to this, it was believed that these varieties were viviparous—giving birth directly to the young. This was the opinion of Dr. Good, of Watson, and others.

The *ascaris lumbricoides*, or long round worm, which is the most common parasite found in children, is described by Dr. Good as having a slightly incurvated head, with a transverse contraction beneath it; mouth triangular; body transparent; color, light yellow, with a faint line down the side; gregarious, viviparous; from six to fifteen inches long; inhabits principally the ilium, but sometimes ascends into the stomach, and creeps out of the mouth and nostrils;

occasionally travels to the rectum, and passes away at the anus. It rarely exists singly, and runs in numbers within a wide range.

The *ascaris vermicularis*, or small threadworm, has its habitat in the rectum, though it sometimes gets into the intestines, and occasionally in the female, into the vagina. "The head is subulate, nodose, and divided into three vesicles, in the middle of which it receives nourishment; skin at the sides of the body finely crenate or wrinkled; tail finely tapering and terminating in a point; gregarious, viviparous, and about half an inch long."

The *trichocephalus dispar*, or long threadworm, is found in the caecum, and especially in sickly children, and those who are poorly nourished.

"The body is obese, slightly crenate, beneath smooth, finely striated on the fore part; the head obtuse, and furnished with a slender retractile proboscis; tail or thinner part twice as long as the thicker, terminating in a fine hair-like point; about two inches long, and its color light yellow."

SYMPTOMS.—With many if not all forms of worms, it is necessary that the bowels be in a condition to furnish a comfortable habitation. This condition is essentially one of want of tone, with, in many, increased secretion of intestinal mucus. We observe in many cases that the patient is poorly nourished, the muscles are soft and flabby, there is a loaded tongue, bad breath, and derangement of the secretions. We are not inclined to believe that this is the result of worms, but simply coincident with them, and in some cases the patient has what is termed *worm fever*, usually of an intermittent character, the paroxysms occurring in the afternoon and evening, at which time we find the skin hot and dry, the pulse frequent, the head hot, and marked irritability and restlessness, and occasionally convulsions. Or the fever may be more obscure, the child

is fretful and nervous, sleeps poorly, grinding the teeth in its sleep, its breath is fetid, tongue coated, bowels irregular, abdomen tumid, is frequently picking its nose, the upper lip swells, a white line appears around its mouth, and it seems to be out of order generally. These are the symptoms of the first named varieties, though not nearly so well marked in the case of the *ascaris vermicularis*. Though seeming to be very plain, all these symptoms may be present and no worms; or worms present, and but few of these symptoms. The only certain evidence of worms is their presence in the faeces, and even then we can not be certain but that all have passed. The *ascaris vermicularis* makes itself known by an intolerable itching and crawling sensation about the anus. At first it generally comes on after the little patient gets warm in bed, the irritation being so great that sleep is impossible; at last, they become more or less troublesome all the time. The irritation is occasionally so great as to impair the health, and occasionally gives rise to convulsions.

In females pruritus and leucorrhœa are sometimes produced. On washing out the rectum with cold water, they will almost always be found, if present. They may occasionally be found about the anal region. They are so small, however, they will often escape detection.

TREATMENT.—The treatment of the *ascaris lumbricoides* and *trichocephalus* will be very similar, the object being to remove the worms, and break up the predisposition to them by removing the condition on which they depend. Very many vermifuge remedies have been recommended and used with success, so that the trouble will be, not that we have no remedies, but that we have too many. The old-fashioned remedy, "Pink and Senna" in infusion, seemed to be about as certain as any other agent, and we are satisfied that if it is as disgusting to the worm as it is to the child, it will readily leave its nest in the bowels,

rather than take the dose. Still it is not more nauseous than the Oil of Wormseed, which is an ingredient of all the principal vermicifuges, as — $\frac{1}{2}$ Oleum Chenopodii 3x., Oleum Terebinthinæ 3ij., Oleum Ricinii 3ij., Aqua Calcis 3x., Syrupus Limonis 5vj.; Mix; the dose being two tea-spoonfuls three or four times a day. Kuchenmeister recommends the Santonine, and the Santonate of Soda, for the ascaris lumbricoides; he considers it to be best administered in oil, in order to bring it into solution as readily as possible, and thus combines it with castor oil, or sprinkles it on bread and butter, and follows it with Jalap and Senna. Troublesome effects sometimes follow the administration of this remedy, as severe irritation of the nervous system, convulsions, tenesmus, bloody stools, and the minor disturbances, green or bluish vision, and discoloration of the urine. He gave Sodium Santonate in doses of from two to six grains on Friday night, and the same dose on Saturday and Sunday mornings, fasting; half an hour after this last powder, confection of Senna and Jalap is taken in sufficient doses to produce several fluid evacuations, the worms passing alive, and sometimes wandering forth without any operation, the intestines having become unpleasant for them.

We now employ a trituration of Santonine with Podophyllin in the following proportion — $\frac{1}{2}$ Podophyllin gr. j. to ij., Santonine gr. x. to gr. xx., White Sugar 3ij.; triturate and make twenty powders. One of these may be given morning and night, until the object is accomplished. This we consider the most efficient vermicuge for lumbricoides. When there are no worms, but only the atonic condition of the mucous membrane with increased secretion of mucus, the patient will be benefited, and sometimes cured by this remedy.

A judicious tonic course of medicine, the bowels being kept regular, and the other secretions free, with an avoid-

ance of all grease or indigestible food, the daily use of the bath, and exercise in the open air, are the only means by which we can break up the tendency to the formation of worms.

Many remedies have been recommended for the *ascaris vermicularis*, but in my opinion all vermifuge medicines should be discarded. If the patient's bowels are irregular, proper means should be taken to overcome the difficulty, and if necessary a tonic and bracing treatment adopted. For the worms I have always directed an injection of salt and cold water, in the proportion of a teaspoonful to half a teacupful, and so far with invariable success. This, with cleanliness and the application of mercurial ointment around the anus, to destroy the worms there, usually suffice. Injections of Corrosive Sublimate one to one-thousand has been recommended.

Should this fail, we will be able to relieve the patient by the use of an Aloetic purgative, as in the following formula: $\frac{1}{2}$ Tincture of Aloes, Compound Tincture of Lavender, *aa.* $\frac{5}{ss.}$, Simple Syrup $\frac{3}{j.}$; a teaspoonful four times a day.

HERNIA.

Hernia, or *rupture*, in the child is of frequent occurrence, and may be congenital or acquired. Of congenital hernia, the most common is the inguinal, next, the umbilical and the diaphragmatic. Of the acquired form, we have the inguinal, femoral and umbilical. A hernia is the protrusion of a whole or portion of a viscous through any of the natural openings in the abdominal wall, or it may be *direct* from the feebleness of the structures. Hernia is of more frequent occurrence in the male, the intestine passing down through the inguinal canal. It is of rare occurrence in the female through the femoral ring.

Hernia may be single, double or multiple.

INGUINAL HERNIA.—Inguinal hernia is of most frequent occurrence. It occurs in both sexes, and may be congenital or acquired. In girls it need not give any uneasiness unless there is associated a hernia of the ovary. In the majority of cases the bowel passing through the internal abdominal ring, traverses the inguinal canal, passing through the external abdominal ring, and finally makes its way into the scrotum.

Attention is drawn to the child by its cries and evidence of severe suffering, and to the abdomen by its contortions, and by the lower extremities being forcibly flexed upon it. A careful examination detects the enlargement in the inguinal region, and the hand placed upon it detects the impulse as the child cries.

Direct inguinal hernia is that form in which the bowel is forced through the abdominal wall immediately above the external ring, through which it may pass, and descend into the scrotum, as in the preceding case.

The distinction between the two is made by tracing the course of the protrusion. In the first there is the oblique distension in the course of the inguinal canal, while in the second the enlargement ceases immediately above Poupart's ligament.

UMBILICAL HERNIA.—Umbilical hernia is of more frequent occurrence in the child than in the adult. It is frequently congenital. This is owing to imperfect closure of the umbilicus, after the detachment of the cord, the intestine being forced through this natural opening. It varies in extent, being sometimes but slight, not larger than a good-sized cherry, but in other cases it may attain the size of an egg.

The diagnosis is easily effected. The child suffers pain and cries severely; draws its feet upwards, and contorts its body as if from colic. An examination of the abdomen detects the seat and character of the injury.

The tumor is recognized by the elastic feel and ease with which it can be returned to the abdominal cavity, the increased size and tension on crying or straining.

DIAPHRAGMATIC HERNIA.—This is a rare condition, and may be either congenital or traumatic. The first is the common form.

The symptoms are pain, dyspncea and the hearing of the intestinal gases in the chest cavity.

FEMORAL HERNIA.—This is said to be never congenital, and rare before the age of puberty. We have met cases in girls as young as seven years. In femoral hernia, the intestine forces its way under Poupart's ligament through the femoral ring, and passing up through the saphenous opening, the tumor is formed in the groin. If the hernia continues to increase, the bowel passes upward over Poupart's ligament, assuming very nearly the position of an inguinal hernia. The symptoms are the same as in the preceding case, and it will be diagnosed by a careful examination.

TREATMENT.—A hernia being diagnosed, the first object of treatment is to return it. This is done by *taxis*—pressure being made on the bowel in the direction that it has passed down. This pressure should be gentle, yet continued, the whole protrusion being well supported with the hand, while one or two fingers are engaged in dislodging and carrying upwards small portions of the gut. As a general rule, but little difficulty will be experienced in replacement, if the pressure is well directed.

If the *taxis* fails from the straining or resistance of the child, it should be brought under the influence of chloroform, when pressure will readily reduce it. Hot applications, the child being in the recumbent position, will sometimes assist us in *taxis*.

After reduction is effected, we will have to select an

appropriate apparatus to prevent the reprodurement of the hernia. For infants and young children, with inguinal hernia, we prefer to use a skein of saxony yarn, encircling the pelvis. One end is passed through the loop formed by the other, the loop resting over the ring. The free end is passed between the thighs and fastened to the girdle behind with a safety pin. This is effective, and will not cause an irritation or chafing. It has an additional advantage in being cleanly, as it can be removed, washed and reapplied. We have used it successfully for years, often displacing a truss with it. In congenital umbilical hernia, we use a simple binder, with a disk of cork or an old-fashioned button mould, covered with soft linen, over the umbilical opening. It has always been sufficient.

In children over two years of age, the ordinary spring truss may be used, so as to excite the part and promote adhesion.

Many trusses are upon the market, varying not only in style, but pads also, some hard and some soft, so-called water pads. Personally, we prefer in children the water pad, when it will keep the hernia reduced. It is not seirksome nor chafing.

In children an operation for a radical cure is seldom necessary. Simple measures, such as outlined above, are usually sufficient. For the technique of the different radical operations, the reader is referred to recent works on surgery.

CHAPTER VII.

DISEASES OF THE LIVER.

The liver is not often the seat of disease in infancy and childhood. Nearly all the forms of disease seen in the adult are, however, occasionally present in later childhood.

This is probably to be explained by the fact that nearly all the diseases of that organ are caused by irregular habits, diet or some grave cachexia.

The organ plays an important role in the economy of the foetus and in children, and in them is proportionately larger and heavier than in the adult.

In the child, the upper limit of the liver dullness in the mammary line is at the fifth intercostal space; in the axillary line at the seventh, and posteriorly, the ninth. The lower border is best defined by palpation, and is found normally in the mammary line, about one-half inch below the free border of the ribs.

The liver may be displaced downward by deformities of the chest, such as occur in rickets and by accumulations of fluid in the pleural cavity. Ascites and tumors in the abdominal cavity may force it upward.

ICTERUS.

Icterus or jaundice in children may arise from several causes. It is practically only a symptom, and should be treated as such.

When caused by an obstruction to the flow of bile from the liver into the intestine, it is called obstructive jaundice. It is also caused by certain changes in the blood itself, as is seen in the physiological jaundice of the new-born, and in that associated with septic conditions. For the purpose of study, it is usual to divide icterus into icterus neonatorum, or jaundice of the new-born, and into jaundice of later life.

ICTERUS NEONATORUM.

ETIOLOGY.—The causes of the first form are very obscure, and while occasionally it seems to arise from some irritation of the *prima vice*, in other cases there is no apparent cause for it.

It is believed to be due to a resorption, and is therefore haematochemical. It is accompanied by a biliary engorgement and the destruction of many blood corpuscles. It is usually seen in feeble and immature infants, and presents clinically many of the same characteristics as icterus due to hepatic congestion.

PATHOLOGY. — In *icterus neonatorum* the coloring matter deposited in the skin is regarded as arising from the natural retrograde metamorphosis of the red globules, but failing to be removed, from some temporary inactivity of the excretory organs. All the symptoms point to this as the true condition, for in the majority of cases, there is no lesion of the digestive canal or its associate organs, all their functions being carried on regularly and well; while in those cases in which there is such irritation, it seems rather from arrest of excretion than from any other cause.

SYMPTOMS. — Icterus neonatorum is frequently attended at first by slight febrile action. Occasionally this is quite marked, and the child is restless and uneasy, and sleeps badly, continuing for from one to four or five days, in a remittent form; it gradually passes away, and the secretions being restored, the child seems as well as ever, but for the yellow discoloration. It will be recollect that in the majority of cases the fever is not high, and passes off entirely by the end of the second day.

The yellow discoloration very gradually fades, seeming to be removed more by the natural removal of tissue than by special absorption. Rarely continuing less than two weeks, it may not be entirely removed for as much as three months.

In some cases the urine and faeces are normal in appearance. In other instances, in which the jaundice is more marked, the urine may be so high colored as to stain the napkins and clothing and the stools clay-colored.

Grave forms of icterus neonatorum are caused by congenital malformations, or obliteration of the ducts. In such cases, the jaundice appears a few hours after birth and steadily increases. The conjunctiva is yellow. The faecal discharges clay-colored and offensive, and the urine stains the napkins yellow or greenish-brown.

The liver and spleen are usually both enlarged. Hæmorrhages from the umbilicus, nose, mouth or stomach may occur. The consequent exhaustion, added to the indigestion and malassimilation, hastens death.

Another grave form of icterus is produced in the infant by septic poisoning. This usually occurs through the umbilicus and takes place a few days after birth. It is distinguished from the other forms by the elevated temperature and by the other symptoms of septic infection. Severe nervous symptoms also ensue, such as convulsions, delirium and coma.

DIAGNOSIS. — We form our diagnosis by the color of the skin, urine and stools. If the jaundice be due to a congenital malformation, conjoined to the discoloration, we have the gradual wasting and subsequent hæmorrhages. When due to septic infection, in conjunction with the first named symptoms, there is the elevated temperature and symptoms of septic infection.

PROGNOSIS. — This depends upon the cause. In a case of benign icterus neonatorum, it is good. In the grave forms, it is absolutely bad. When due to malformations, life may be prolonged for several months, but the fatal result is inevitable.

TREATMENT. — For *icterus neonatorum* I should prescribe Aconite in the usual doses, aiding it with the general bath, the general hot bath, or the hot foot-bath. When the fever declines we should direct that Asclepias be given in

addition. It will be recollect that saffron has been the remedy of old women and nurses for centuries, and there is no doubt but that benefit has been obtained from it. Its action was diaphoretic. The treatment I have named restores all the secretions, but acts especially upon the skin.

Chionanthus is one of the best remedies. It is indicated by the jaundice, clay-colored stools and enlargement of the liver.

Chelidonium is also of value; the full, pale, sallow tongue and mucous membrane, pale, sallow skin, jaundice and torpid liver call for it.

Should there be constipation, full, doughy abdomen, high-colored urine, and clay-colored, hard stools, Podophyllin in very small doses is the remedy.

JAUNDICE AFTER EARLY INFANCY.

This form of jaundice is due to the same causes that produce jaundice in the adult. The bile, instead of passing into the intestines, passes into the blood, owing to some obstruction in the biliary passages. It may be a gastro-duodenitis, causing a swelling of the mucous membrane about the opening of the ductus communis choledochus. The inflammatory action may pass up the ducts and cause a retention in the liver. It may be a plug of inspissated bile, or a gall stone. Changes in the liver structure itself, as a cirrhosis, may cause the jaundice.

PATHOLOGY.—Jaundice is but a symptom of some lesion of the liver or of the blood. It consists in a change of the coloring material of the blood, and its being set free and deposited in the tissues; or more frequently in the retention and absorption of the coloring matters of the bile, and their deposit in various structures, principally the skin and

DIAGNOSIS.—The diagnosis of jaundice is easily made. The yellow discoloration is so unlike anything else met with, if we except Addison's disease, which never occurs in childhood, that no mistake can be made.

When accompanied by gastric disturbances, such as nausea, vomiting and pain in the epigastrium, it is gastro-duodenitis. When palpation reveals a distended gall-bladder, it is usually positive evidence of an obstruction in the common duct.

PROGNOSIS.—The prognosis will depend upon the cause. Even when this is removable, the yellow discoloration may remain for some time. When due to a gastro-duodenitis, the prognosis is nearly always good. When the jaundice persists for some time and grows deeper, with evidences of an obstruction, such as clay-colored stools and dark urine, there is probably an organic disease, even though the symptoms be not distinct.

TREATMENT.—The most rational treatment of jaundice is that which is directed toward removing the cause. Certain symptoms which are annoying can and ought to be relieved.

In the first variety of jaundice, with fever, partial arrest of the secretions, and with an irritation and determination to the liver, we would advise the following course: Put the patient upon the use of Veratrum or Aconite, the usual doses, adding Gelsemium, if there is irritation of the urinary apparatus, and uneasiness in passing urine. Associated with this, the Chionanthus may be given in doses of from one to five drops every three hours, according to the age of the patient. The Chionanthus is as nearly a specific for jaundice as a remedy can be for a named disease. Chelidonium is indicated when there is a full, pale, sallow expression, and pale, sallow mucous membranes, with enlarged, torpid liver. The patient should have the gen-

eral bath and hot-foot bath, to aid the action of the sedatives, and the hot pack to the right hypochondrium, or, better, an entire abdominal pack to relieve the irritation of the liver.

This plan should be followed up, without addition, until the pulse has lost its frequency and hardness, and the skin is becoming soft and active, and urinary secretion more free. If need be, we now add to this a solution of Potassium Acetate in doses proportioned to the age of the patient. We watch its action at first, that it does not irritate the kidneys, and as it acts kindly, increase its quantity.

We observe as the febrile action passes off, and the urinary secretion is re-established, that the discoloration commences to fade. The reason is obvious, as the urine is highly charged with coloring matter, so much so as to stain the linen. Indeed, in all cases of jaundice, the coloring material is principally removed by the kidneys, and not, as generally thought, by the liver.

In the second form there is an atonic condition, with congestion of the liver, and a failure on its part to remove the biliary material from the blood; or, having secreted it, it is prevented from passing to its usual destination by the engorgement of the viscera, and is re-absorbed into the circulation, and from thence deposited in the tissues. In this case we may give mild cathartics, especially such remedies as act as special stimulants to the liver. Small doses of Podophyllin and Leptandrin, thoroughly triturated with sugar, or Potassium Bitartrate, may be given with advantage, until they have produced the desired effect. Sodium Phosphate seems to have an especial action upon the liver, and should be given in from twenty to thirty grain doses, when the stools are clay-colored and there is constipation. In place of this, small doses of Nux may be given, and the region of the liver thoroughly rubbed with quinine and

lard, or if there is marked fullness, or the patient has suffered with malarial disease, the inunction will be with ointment of Polymnia

This is followed by the bitter tonics, Hydrastine, Quinine, or remedies of like character, and some pleasant preparation of Iron. Stimulant baths, with friction, are employed to obtain an equal circulation, and stimulant frictions to the region of the liver, to excite it to action.

Having obtained these influences and restored the functions of the liver and intestinal canal, we have still to promote the removal of the coloring matter from the skin. This is accomplished, as in the preceding case, by the use of a saline diuretic, Potassium Acetate or Citrate being preferable, with the Chionanthus and Sodium Phosphate.

CONGESTION OF THE LIVER.

ETIOLOGY.—Congestion of the liver may be either active or passive. The active is an acute condition, and is caused by some irritation of the mucous membrane of the stomach, by some stimulating article of diet. It may also occur, as the first stage of an abscess of the liver, or as the result of some of the acute infectious diseases.

Passive congestion is a secondary affection, caused by anything which hinders the outflow of the blood into the ascending vena cava. It is frequently associated with those diseases of the heart that interfere with the pulmonary circulation and induce a stasis of the blood in the liver.

PATHOLOGY.—In the active form, the liver is enlarged; the capsule tense and the surface red. On section, bright red blood oozes from the cut surface. The vessels are distended and the liver structure firmer than in health. The hyperæmia is uniform throughout the liver, except when it precedes an abscess, when it is localized.

In passive hyperæmia or congestion, the liver is greatly enlarged, much more so than in active congestion. The surface is often irregular; the capsule dull. The liver is firm on pressure and of a dark red color.

SYMPTOMS.—There is usually a chill, followed by fever. There are also gastric disturbances; vomiting, headache, mild delirium, and occasionally convulsions. Locally we note the size of the liver by percussion and palpation. The hepatic region is also the seat of pain and tenderness. The fever soon abates, but the pain and tenderness continue for some time.

Passive congestion being usually secondary, the first efforts toward a diagnosis are directed to ascertaining the condition of the heart and lungs. The secondary symptoms are produced by the enlarged liver and the mechanical effects produced by it.

We note the uniform enlargement by the dullness on percussion, and by palpation we feel the edges of the liver smooth and rounded, reaching in some instances to the umbilicus in the median line, and almost to the ilium in the nipple line. Jaundice may be present, as well as ascites and hemorrhoids, the latter due to the mechanical pressure. The duration of the disease is prolonged.

DIAGNOSIS.—Active congestion is of short duration, and is not apt to be mistaken for any other disease. Passive congestion being the result of some other disease that interferes with the circulation, usually the heart or lungs, generally some mitral disease in children, the diagnosis necessitates the discovery of the cause.

PROGNOSIS.—In the first form, the prognosis is good. As the second form depends upon the condition of the heart and circulation, and its ability to regain its tone and strength, it will form the basis of our prognosis.

TREATMENT.—The treatment of the first form consists in the regulation of the diet; withholding stimulants and stimulating articles of food. The use of counter-irritants, or of Polymnia Ointment, over the liver, and internally such remedies as Podophyllin, Leptandrin, Sodium Phosphate and Chionanthus or Chelidonium, as indicated above.

In passive congestion, the treatment must of necessity be directed primarily toward the heart and circulation. Measures should also be employed to relieve the secondary effects. Among the remedies we will find useful are: Apocynum for the ascites; Strophanthus for the heart and ascites, when its action is irregular, there are evidences of mitral disease, dyspncea and weakness.

Chionanthus, Chelidonium or Ceanothus when the spleen is also enlarged.

The Polymnia Ointment applied hot, with massage over the enlarged organ, affords some relief.

FATTY LIVER.

Fatty liver is also as a rule a secondary affection, being found in children suffering from tuberculosis or other varieties of wasting diseases, especially those of the digestive tract. It occurs in two forms: fatty infiltration, where particles of fat penetrate the liver cells and interfere with its function; and fatty degeneration, where the protoplasm of the cell is converted into fat.

PATHOLOGY.—The liver is enlarged and its edges smooth and rounded. The surface smooth and feels doughy, pitting on pressure, and has a pale, yellow color. On section with a warm knife, oil drops are left upon the blade.

SYMPTOMS.—Ascites, jaundice and other peculiar hepatic symptoms are wanting. The symptoms are those of the

original disease. Attention has been called to a semi-transparent, pale, smooth, soft skin, as occurring in fatty liver. The liver is found to be enlarged by physical methods.

DIAGNOSIS. — The liver is found to be enlarged, and is recognized by its soft, smooth character. We verify our diagnosis by exclusion.

PROGNOSIS. — This depends upon the associated disease.

TREATMENT. — The treatment is dietetic and hygienic. Medicinally, it is confined to the originating disease.

AMYLOID LIVER.

Amyloid degeneration, waxy or lardaceous liver, is one of the most frequent forms of painless enlargement of the liver occurring in childhood. The spleen and kidneys are likewise affected.

ETIOLOGY. — This disease, like fatty liver, is a secondary one. It is due to tuberculosis, prolonged suppuration, such as is seen in tubercular bone disease. It is also seen as a sequel of chronic empyema and of syphilis.

PATHOLOGY. — The liver is found greatly enlarged. Its structure is dense and heavy. The cut surface is dry, homogeneous, of a gray, waxy color, and glistening. The degeneration begins in the intralobular blood vessels, causing them to become thickened and translucent; finally the hepatic cells become involved.

SYMPTOMS. — The disease presents but few symptoms of its own. Ascites may be present, when the liver is very large. Jaundice is not present, but the face has a peculiar, waxy appearance. The dropsy may occur from the associated degeneration of the kidneys, or from pressure caused by the enlarged liver. The liver frequently becomes

exceedingly large, reaching to the umbilicus or even the crest of the ilium.

The changes take place slowly, and the course of the disease may run for years, the patient dying from some intercurrent disease.

DIAGNOSIS. --- This is not usually difficult, when the disease is fully developed. The cachexia, the greatly enlarged liver without pain, associated with enlargement of the spleen, and albuminuria, developing in a case of chronic suppurative disease or syphilis, forms a group not difficult to recognize.

PROGNOSIS. — Unfavorable.

TREATMENT. — The treatment is nourishment and the treatment of the cause, antisyphilitic when syphilis exists. Treatment of tubercular bone diseases, surgically if necessary. In fact, the sole treatment must be directed toward the cause.

ABSCESS OF THE LIVER — SUPPURATIVE HEPATITIS.

Although a rare affection in children, occasional cases are seen, the result of traumatism.

ETIOLOGY. — Most cases recorded in children resulted from traumatism. Others were the result of suppurative pylephlebitis, or a metastatic pyæmic abscess.

SYMPTOMS. — The distinguishing symptoms are chills, irregular fever, sweats, prostration, vomiting and diarrhoea. Pain and tenderness, the latter over the liver. The liver is tender, enlarged and irregular in shape. The abscess may be single or multiple.

DIAGNOSIS. — The diagnosis is made by the chills, hectic fever, pain and tenderness over the liver. It is made positive by the exploring needle.

PROGNOSIS. — The outcome is always uncertain; especially so when the abscesses are multiple.

TREATMENT. — The treatment is mostly surgical, the necessity being the evacuation of the pus, either by incision and drainage or by aspiration. Beyond this, there is little to do, save relieving the pain as much as possible and sustaining the patient's strength.

CIRRHOSIS.

Although exceedingly rare in children, cases of this disease are recorded.

ETIOLOGY. — While the causes are obscure, such as are recorded have been traced to alcoholism, syphilis, rickets and tuberculosis.

PATHOLOGY. — The marked features of cirrhosis are: The formation of connective tissue in the liver. It is irregularly distributed and tends to contract. The liver cells become atrophied from pressure or from interference with the portal circulation. There may be a fatty degeneration. Occasionally the liver may be enlarged; usually it is atrophied.

SYMPTOMS. — These are the same as in the adult. At first the symptoms are indefinite and referred to the digestive organs. Later there is ascites, enlargement of the spleen and dilatation of the abdominal veins. Slight icterus, hemorrhages, cachexia and general dropsy follow. The course is steadily and rapidly downward.

PROGNOSIS. — Unfavorable.

TREATMENT. — The treatment is not satisfactory. When due to syphilis, such remedies as Potassium Iodide, Stillingia, Iris and Phytolacca should be used. Podo-

phyllin is also of some service. If due to rickets or tuberculosis, they should receive appropriate dietetic, hygienic and medicinal treatment.

Chionanthus, Chelidonium and Ceanothus are of service. For the ascites or dropsy, Apocynum and the saline diuretics or cathartics.

CHAPTER VIII.

DISEASES OF THE PERITONEUM.

PERITONITIS.

Peritonitis is of rare occurrence as an idiopathic disease, both in the adult and child.

It does occur, however, in children in three forms, the acute, chronic and tubercular. Acute peritonitis may occur at any period of infancy or childhood.

As a secondary disease it may arise during the progress of fevers, or from diseases of the intestinal canal, and is met with more frequently.

ACUTE PERITONITIS.

Etiology.—The cause of idiopathic peritonitis is most commonly cold, arising from exposure or as the result of a burn. In infancy it may arise from direct infection, through the umbilical vessels. Frequent causes are traumatism, as from falls, blows or a surgical operation.

Secondary, it may arise in diseases of the intestinal canal, or abdominal viscera, the peritonitis being an extension of the inflammation of the part first diseased. As in an

appendicitis, or an obstruction, such as would occur from a volvulus, intussusception, or strangulation.

We have still the exceptional cases where, from perforation of the intestinal canal or of the stomach by ulcers, there is an escape of their contents into the peritoneal cavity, and inflammation as the result.

The same may occur from the perforation of an empyema through the diaphragm. It may also arise as a secondary infection from the acute infectious diseases, most commonly scarlatina or pneumonia.

PATHOLOGY.—The changes found in an inflammation of the peritoneum are similar to those which take place in pleurisy or inflammatory affections of other serous membranes. The part affected is found injected, and lymph in considerable quantities is thrown out upon the surface. This process may be localized or general. In children it is usually general. As a result of the inflammation, the peritoneum is covered by yellowish or grayish lymph, in every state of organization, from a thin film upon the surface to strong bands, which tie parts together, or agglutinate adjacent parts. In some cases there is an abundant serous fluid in the peritoneal cavity, which is usually clear; or it may be turbid from flakes of lymph or even bloody; at others more or less pus. This is usually the case when the inflammatory action is the result of a perforation. Exceptional cases may be purulent from the onset.

SYMPTOMS.—In acute peritonitis the inflammation is ushered in with vomiting and a chill, followed by high febrile action. The vomiting may be only at the onset, or it may persist throughout, simulating the vomiting of a strangulation.

The surface is hot and dry, the pulse frequent, small and hard, with much irritation of the nervous system. The countenance has an anxious and restless expression, and

is frequently contracted as if from severe pain. The thighs are flexed upon the abdomen, and the body flexed to take off the tension of the abdominal muscles, which are distended and rigid.

In most cases there is constipation; flatus only passing. Occasionally there is neither faeces nor gas, the symptoms resembling those of a complete obstruction, in which case the abdomen is greatly distended and tympanitic. Diarrhoea is not rare, however. This distention causes dyspncea and thoracic breathing. Retention of the urine is quite common.

In all cases the abdomen is tense and hot, and more or less tympanitic. There is marked tenderness on pressure, even the weight of the covering producing pain in the severe cases, and slight movements elicit cries from suffering.

As the disease approaches a fatal termination, the pulse becomes very frequent, small, and thready; the countenance is contracted and anxious, and the abdomen much distended, though there is less sensibility to pressure.

There is hiccup, cold extremities, clammy perspiration and collapse.

DIAGNOSIS. — The diagnosis of peritonitis is made from the symptoms of acute inflammation within the abdominal cavity, with tenderness on pressure, and tympanitis; at the same time the fever being active, and the pulse frequent, and unnaturally small and hard.

PROGNOSIS. — Acute peritonitis is a very serious disease and the prognosis grave.

In older children the prognosis is not always so unfavorable, except in those cases in which it is associated with some other severe lesion.

TREATMENT. — The patient is put upon the use of Aconite or Veratrum, as the pulse is small and frequent,

or full and bounding, with *Rhus Tox.* if the pulse has a sharp stroke and the papillæ of the tongue prominent. *Bryonia*, when there are sharp, quick pains, flushed face and anxious countenance. *Asclepias*, when the pains are sharp and cutting, with dry skin and mucous membranes. If the bowels are loose and there is nausea, with an elongated, pointed tongue, *Ipecac* can be combined with the *Aconite*. If there is the expressionless mouth with nausea and pain simulating colic, *Nux* may be combined or alternated with the *Aconite*.

Belladonna has a marked influence upon congestion, and is frequently called for when there is dullness and drowsiness. If there be a flushed face, high fever and restlessness, *Gelsemium* should be substituted for it.

Magnesium Sulphate is of service when there is constipation. We must be sure, before using it, that the constipation is not due to a strangulation.

Food, save only in a fluid form, must be withheld, and the thirst relieved by small pieces of ice held in the mouth.

Locally, many advocate cold applications. Our own experience teaches us that children do not tolerate them well. We use hot applications, continuously and carefully applied. When there is distention and tympanitis, hot cloths upon which Turpentine has been freely sprinkled are applied. In place of these, the abdomen can be anointed with Turpentine and lard, and the dry, hot flannel applied.

If the pain is very severe, and is not controlled by the means named, enemas containing Opium may be employed. Five to twenty drops of Tincture of Opium may be used with two tablespoonfuls of Starch Water or Mucilage, and will give great relief. I think it much better than to give Opium by mouth, and we can not well resort to the hypodermic use of Morphine, which I prefer in this disease in the adult.

It should be borne in mind that many cases of acute peritonitis demand surgical interference. Especially is this true of those cases resulting from appendicitis or perforations. Surgical measures applied in season will, no doubt, save many cases that would otherwise be lost.

CHRONIC PERITONITIS.

Chronic peritonitis is, in a large number of cases, of tubercular origin. It may occur, however, associated with some disease of the intestines or other viscera of the abdomen.

The symptoms are indefinite. There are gastro-intestinal disturbances, such as loss of appetite, constipation or diarrhoea, and colicky pains. There is noted a gradual decline in the general health and the presence of ascites. Its course is usually favorable.

TUBERCULAR PERITONITIS.

This is the usual form of chronic peritonitis met with in the child. In fact, the peritoneum is frequently the seat of tubercular inflammation in early life. It is usually due to an extension of the disease from some other organ, and thus is a secondary affection. Infection may take place directly from the intestines, the mesenteric glands, or the pleura. Occasionally an exciting cause is present, such as a fall or blow upon the abdomen. It may follow an exposure.

PATHOLOGY. — The pathology of tuberculosis has been previously dwelt upon. In tubercular peritonitis a variety of conditions are found pathologically, and which present some differences in their symptomatology.

In miliary tuberculosis the peritoneum may be studded with small, gray, translucent tubercles. More frequently the peritoneum becomes thickened, the intestines matted

together, and adhesions formed; caseous masses and small abscesses are common. The omentum may become thickened and contracted into a hard mass. In other cases the mesenteric glands become caseous, and tubercular ulcers of the intestines are associated with the peritonitis. The abdominal organs may become involved, the capsule of the liver and spleen becoming thickened and the organs lardaceous. When fluid is present, it is usually serous or fibrinous; it may be hemorrhagic or purulent.

SYMPTOMS.—The symptoms are not usually well defined. There is usually a period of ill-health. There are fever, rapid, small pulse, loss of appetite, more or less acute pain in the abdomen, and attacks of diarrhoea. Rapid loss of strength follows, and ascites soon appears. The abdomen becomes distended, with enlarged veins upon the surface and a protrusion of the umbilicus. By palpation small masses may be felt, resulting from the induration of the omentum or the enlargement of the mesenteric glands. The progress of the disease is modified by the course or extension of the tubercular process elsewhere. The cases are essentially chronic. The process commonly involves other organs, the most common being the mesenteric glands and lymphoid glands of the intestines. The liver and spleen are not uncommonly involved.

DIAGNOSIS.—The diagnosis between a simple and tubercular peritonitis is not always simple. When ascites is present, it must be differentiated from that caused by an obstruction to the portal circulation, or from cardiac disease. When it is chronic and associated with fever, the chances are it is tubercular. Especially is it so if the physical signs and symptoms of disease of the lungs are also present. If ascites be absent, the irregular nodules or tumors felt in the abdomen, with tenderness and pain and fever, direct our diagnosis.

PROGNOSIS.—The prognosis must always be guarded. Many complications, as well as the involvement of other organs, may take place. Some cases do recover, though the risks of an acute attack supervening are great.

TREATMENT.—The treatment is hygienic and dietetic, as pointed out in the article on Tuberculosis. Fresh air, sunshine, good food or alimentation, with rest, are the essentials of a successful treatment. The medicinal measures are such as have been pointed out before, and should be chosen in the same manner.

Surgical methods have been advocated of late years, and employed with a large measure of success. It has been clearly demonstrated that a laparotomy and a washing out of the abdominal cavity have set up a reparative action that has resulted in a cure.

CHAPTER IX.

DISEASES OF THE RESPIRATORY APPARATUS.

The respiratory apparatus consists of the cavities of the nose, the pharynx, larynx, trachea, bronchial tubes, parenchyma of the lungs, and the investing membrane—the pleura. Each of these parts separately may be the seat of diseased action, or two or more may be engaged at one time. The diseases are mostly of an inflammatory character.

We diagnose these diseases in part by the general symptoms, as we do affections of other parts of the body. But to confirm such diagnosis and render it more exact, we are guided by certain *physical* signs, manifest to the senses of sight, hearing, and touch. This is called physical diagnosis, to distinguish it from the ordinary means by general symptoms.

We purpose giving but a brief space to the subject of physical diagnosis. For further information the reader is referred to special monographs on the subject.

The information for physical diagnosis is obtained from an examination of the conformation of the thorax, respiration, cough, and sputa by inspection, and from auscultation and percussion.

CONFORMATION OF THE THORAX.—But little information is obtained from the form of the thorax in acute disease. The general shape of the thorax in the child is somewhat cylindrical, the conical shape of the adult not being attained until after puberty. The antero-posterior and transverse diameters are nearly equal in the new-born, and remain so until after the third year, when the transverse diameter becomes greater, and increases steadily up to adult life.

On account of the shape of the chest in children, the lungs are situated more posteriorly than in the adult; a fact not to be overlooked.

The walls are elastic and yielding, owing to the cartilaginous condition of the framework; and, on account of the imperfect development of the muscular structure, they are thinner.

This yielding character of the walls causes the chest to sink readily when there is an obstruction to respiration, and to bulge as a consequence of effusions.

RESPIRATION.—The respiratory movements of the child are more open and free than in the adult, and at the same time more superficial. Changes in the respiratory movements of children have less diagnostic value than in the adult, because they may be influenced by slight lesions, or by derangements of the nervous system. Considerable irregularity of the respiratory movement is permitted, without seriously interfering with the function.

As has been previously noted, the rate of respiration in an infant during the first year varies from twenty to thirty-five per minute. This may be considerably increased during waking hours. The type is diaphragmatic until about the seventh year, when it becomes costal. The rhythm in young infants is also irregular, save only in sleep, regular rhythmical respiration not being established until after the second year. Changes in the rhythm are then due to pulmonary and cerebral diseases.

The respirations are increased from pulmonary inflammations. Short and catchy breathing, frequently accompanied with a grunt in pleuritic inflammations; rapid and labored respiration, dyspnoea or orthopnoea are frequent in croup or capillary bronchitis.

COUGH.—Cough is an indication of irritation of the respiratory mucous membranes. The purpose fulfilled by the normal act of coughing is removal of irritating matters which may be in the air-passages. The irritation of disease gives the sensation of something irritant within the bronchial tubes, hence the cough. The act of coughing removes increased secretion of mucus, and keeps the air-passages free for the performance of the respiratory function.

Cough may be sympathetic — depending upon disease of some part other than the lungs, as when it arises from disease of the stomach, liver, or other abdominal viscera; or it may be dependent upon the irritation of the nervous centers, especially of the base of the brain.

The short, irritative cough is generally met with in the first stages of inflammation of the parenchyma of the lungs. The hoarse and stridulous cough results from laryngeal disease. The hollow, rattling cough is found in bronchitis, with increased secretion. A dry cough indicates want of secretion; a moist or *mucous* cough, increased secretion.

SPUTA. — While we obtain considerable information in diseases of the adult from an examination of the sputa, we learn but little in diseases of childhood. The adult raises the secretion by an act of coughing, and spits it out; the child raises it to the larynx, and swallows it. If the sputa is ejected, and can be examined, it will give the same information as in the adult.

PERCUSSION. — The practice of percussion does not give the same information as in the adult. The walls of the chest are thin, and the comparative resonance or dullness is affected by minor circumstances in a greater degree. Neither do we have solidification of the lungs, even in pneumonia, as in the adult.

The blow must be light, using either a single finger or small percussion hammer, and using a finger of the opposite hand as a pleximeter. The normal percussion note is slightly tympanitic, owing to the relatively large bronchi and the thin chest walls. It is also exaggerated in the interscapular region and beneath the clavicles.

Still, *resonance* on percussion gives the information that the lungs are permeable for air, and there is no structural reason for impaired respiration. And *dullness* on percussion is evidence of congestion, or of effusion into the structure of the lungs.

AUSCULTATION. — We obtain the most certain information in regard to the condition of the respiratory organs from auscultation. This may be practiced with the naked ear or with the stethoscope. In listening to the anterior or lateral portions of the thorax, the stethoscope is necessary, as it is less apt to frighten the child. For the posterior portion it can be dispensed with.

The posterior portion should always be examined, as it is here we are most likely to find signs of disease, and we are less likely to frighten the child. A good position for

this examination is to have the child held over the mother's or nurse's shoulder.

The normal respiratory murmur of the infant is described as puerile. It somewhat resembles bronchial breathing. It is rude, loud, and seems to be close to the ear. It is especially loud where the bronchi are superficial, as between the clavicles.

Having become familiar with the normal sounds, we are better prepared to distinguish the abnormal ones, heard in diseased conditions of the lungs.

CORYZA.

(Acute Nasal Catarrh — Acute Rhinitis.)

Acute nasal catarrh, or rhinitis, is an acute catarrhal inflammation of the upper air-passages. It may occur as an independent affection, or it may precede the development of some other disease.

Etiology. — Certain children seem predisposed to repeated attacks of acute nasal catarrh. This predisposition may be inherited, but in the majority of cases is acquired by children who get but little fresh air. They are coddled and kept indoors, unless the weather be perfect. They live and sleep in rooms that are overheated, and kept close for fear of catching cold. They are overclothed, both indoors and out. These extra precautions result in great sensitiveness of the mucous membranes, especially of the nose and pharynx. Infants under three years of age, as well as rachitic children, are the most frequent sufferers.

The exciting causes are exposure to cold and draughts, thus chilling the surface of the body. Exposure to the raw winds of spring without sufficient protection is a frequent cause. It may be a premonitory symptom of measles, nasal diphtheria, influenza, or erysipelas of the face.

SYMPTOMS.—The changes in the mucous membrane are not great, and are usually confined to an increased redness and swelling, due in a large measure to the mucous discharge. The attack is usually ushered in by sneezing, injection of the conjunctiva, and more or less general febrile reaction. The nasal passages become occluded, and there is a discharge, at first profuse and watery; finally, if the attack be at all severe, muco-purulent. This discharge is acrid and irritating, and soon causes a soreness of the upper lip and edges of the nostrils, unless cleanliness be enjoined.

The obstruction to respiration interferes with nursing, and causes mouth breathing. The consequent dryness, discomfort, and hunger cause disturbed sleep, snuffing, and fretfulness. The inflammation may extend to the conjunctiva, the eyes becoming injected and watery, followed by a thickening of the secretion, which closes the lids during sleep. It may extend to the eustachian tubes, closing them, and thereby causing deafness and otalgia, and may result in otitis. In young children the inflammation may involve the lymph glands of the neck or retro-pharyngeal region, and in either may terminate in an abscess.

Occasionally it is accompanied by disturbances of the digestive tract, and there will be vomiting or a diarrhoea with mucous stools. The gagging and vomiting so frequently noticed in the morning are due to an accumulation of the nasal secretion in the naso-pharynx. The mild form lasts but two or three days, and the severe from one to three weeks. Repeated attacks of the acute form may develop the chronic.

DIAGNOSIS.—Acute nasal catarrh is to be distinguished from that due to measles, influenza, diphtheria, or hereditary syphilis. In measles and influenza there are more fever and constitutional disturbances. In nasal diphtheria there will usually be membrane seen upon the anterior

nares or tonsils. If it be wanting, the discharge is profuse and tinged with blood. Persistent acute catarrh in an infant suggests syphilis, and the patient should be carefully watched.

TREATMENT.—The little patient should be placed in a room in which an equable temperature is maintained. The bowels should be freely opened and *Asclepias* given internally when the pulse is full and soft, scanty perspiration, pleuritic pains. *Aconite*, when the pulse is small and frequent, with pyrexia, and the action aided by the hot foot-bath. *Belladonna* is used if the child is dull and wants to sleep a great deal. It has also a direct action upon the secretion by relieving the congestion. *Gelsemium* is the remedy if the head is hot and the face flushed. *Phytolacca*, if the tongue is pale, the throat sore, or any enlargement of the lymphatic glands. *Rhus*, in those cases where the discharge is acrid, and we can see by the expression of its face that there is much irritation of the mucous membrane. *Sodium Sulphite*, if the tongue is pallid and dirty, or if there is eczema. *Sulphurous Acid*, when the tongue is red and dirty, and the tissues somewhat puffy.

Locally, either *Albolene*, *Sweet Oil*, or an alkaline solution may be applied by means of a medicine dropper, brush, or spray apparatus. A solution of *Sodium Bicarbonate*, instilled by means of a medicine dropper, is one of the most convenient and efficient means of cleaning the nostrils. Except in the case of older children, the spray is difficult to use, as it frightens the child and causes it to resist. The prophylactic treatment consists in solving the question, how to prevent the child from taking cold, as well as the proper ventilation and heating of sleeping and living rooms, proper clothing, etc. Children should be allowed to live out of doors as much as possible in seasonable weather. Cold sponging of the neck, chest and spine is

advocated for those susceptible to taking cold, as well as the prohibition of chest protectors, pads, mufflers, etc.

CHRONIC CATARRH.

This term is used to designate a chronic nasal discharge. The discharge is not the disease, but is a symptom due to a variety of pathological conditions, among which are adenoid growths of the pharynx, foreign bodies in the nose, polypi, deviations of the septum, deformities of the nasal passages and the various forms of chronic rhinitis.

Adenoid growths of the pharynx are probably the most frequent cause of a chronic nasal discharge in infants and young children. Foreign bodies in the nose should be suspected, whenever there is an abundant muco-purulent discharge, limited to one nostril. Children quite frequently push peas, beans, beads and other substances in the nose, which lodge there. The efforts of the children or mother to remove such obstructions often result in simply pushing them farther up the nose. The foreign substance soon sets up a mechanical irritation, by which pain, swelling, sneezing, and sometimes hemorrhages are produced. This is followed by a catarrhal inflammation, and in a few days by a purulent discharge. These symptoms point directly to an obstruction of the nostril.

Nasal polypi, although an infrequent cause of a nasal discharge in childhood, are nevertheless occasionally seen. The symptoms are, a partial or complete closure of one or both nostrils, aggravated by every attack of acute coryza, or by the advent of damp weather. The reflex symptoms are cough, sneezing or asthma; headache, disturbances of smell, taste and hearing. The discharge is less in amount and not as purulent as when caused by a foreign body, but is of longer duration.

Chronic rhinitis is described as existing in two forms, the Hypertrophic and Atrophic.

ETIOLOGY.—The hypertrophic form is thought to be the result of frequently repeated attacks of acute rhinitis. It is found in children suffering from that peculiar dyscrasic condition called "lymphatism," and is usually associated with an hypertrophy of the adenoid tissue of the pharyngeal vault.

The atrophic form, known also as fetid catarrh, and of which ozeana is but a type, is said to be a late stage of the hypertrophic form. Others claim it to be a primary disease, either congenital or hereditary. Syphilitic rhinitis is frequently classed as but a type of the atrophic form.

PATHOLOGY.—The characteristic changes of the hypertrophic form consist in a chronic inflammation of the nasal mucous membrane, producing an hypertrophic thickening of the mucosa. This is marked over the turbinate bodies, especially at the posterior end of the lower turbinate. The thickening of the mucous membrane increases and encroaches upon the nasal passages. In addition there is an hypersecretion of mucus. In the atrophic form the changes are a thinning or atrophy of all the structures, with enlargement of the cavities. The mucous membrane is dry and coated, with an accumulation of dried secretion and scabs. Should it be due to secondary syphilis, it is accompanied by the formation of ulcers or mucous patches. There are gummatous deposits which break down and form ulcers of the mucous membrane and deeper tissues. Periostitis and necrosis of the bones; perforation of the septum, hard or soft palate, as well as ulceration of the pharynx and soft palate, are frequently concomitant results of this form.

SYMPTOMS.—In the hypertrophic form, there is an obstruction to nasal respiration, by reason of the hyper-

trophy of the turbinate bodies. The sense of smell is impaired, and there is a discharge of a thick, tenacious secretion from the nares. In these cases the secretion pours backward, and, dropping into the pharynx, is ejected by an act of hawking and expectoration.

In addition to this, there is the unpleasant nasal tone to the voice, and the occasional stopping up of the nose, compelling the child to breathe through the mouth.

Among the reflex symptoms are cough, catarrh of the larynx or bronchi, muscular spasm, giving rise at times to a spasmodic croup or asthma. From adenoid growths of the pharynx, it is differentiated by means of the rhinoscope. In infants and young children they are usually associated. Atrophic rhinitis is conspicuous by reason of the disgusting odor emanating from the nares. The scabs and crusts cause some degree of obstruction. The discharge is scanty, the sense of smell impaired or lost, and middle ear affections are common. Atrophic rhinitis is uncommon in children, except it be due to hereditary syphilis.

DIAGNOSIS.—The diagnosis is not difficult, as the continued abundant discharge from the nose, its occasional closure, the nasal tone of voice, and the pain and uneasy sensations in the nose and frontal region, are very prominent.

The diagnosis and differentiation of form are made by means of the head mirror and rhinoscope.

PROGNOSIS.—The disease will rarely, if ever, get well without treatment; but an appropriate general and local treatment is necessary. Too often these patients are the subject of a routine treatment, without any specific or special object in view. If neglected, permanent impairment of the organs of hearing, smell, speech, or respiration is often the result.

TREATMENT.—The general treatment will vary accord-

ing to the indications, and much care will be necessary to select the right remedy. The possible remedies might be named, as Arsenic, Iron, Sodium Sulphite, Sulphurous Acid, Hamamelis, Phytolacca, Donovan's Solution, Potassium Iodide, Penthorum Sedoides, and Calcium Sulphide. The relaxed, atonic skin, with feeble circulation, will be benefited by Arsenic; pallid skin, with blue veins, dusky redness of mucous membranes of nose and throat, with occasional erysipelatous flushings of skin, call for Tincture of Muriate of Iron; Sodium Sulphite, if there is eczema of the face; Sulphurous Acid, if there is deep redness of mucous membranes, with offensive discharge; Hamamelis, if the tissues are full and atonic; Phytolacca, if the throat is sore, or the cervical glands enlarged; Donovan's Solution, if the bones are being involved, the skin dirty, and especially if a syphilitic taint is suspected; Potassium Iodide, if there is a broad, atonic tongue, with leaden pallor; Penthorum should be used when there is fullness of the nasal mucous membrane, abundant discharge, and spongy gums; Calcium Sulphide, when the discharge is abundant and purulent.

In some cases I have employed Rhus with Aconite or Veratrum, with most marked benefit. The need of Rhus has the usual indications: frontal headache, persistent, with burning in the eyes or nose. The Aconite is suggested by the irritable tonsils and throat, and the Veratrum by cough and mucous rattling in bronchia.

At the same time the child should have its regular bath every one or two days, using the alkalies when indicated, the tonic bath if the child is anaemic, or the fatty inunction if the skin is dry and harsh.

It is understood that should a foreign body be the cause of the discharge, it should be removed. This can sometimes be accomplished by holding the free nostril closed

and blowing the nose forcibly. Often it is necessary to use the forceps.

Polypi are to be removed by the forceps or snare. My personal preference is the snare.

The treatment of adenoids will be outlined later.

With young children it is somewhat difficult to make proper use of local remedies, which I prefer to administer by inhalation, or with the steam or air atomizer. In this way they can be brought into direct contact with the diseased structures. The objects of the local treatment are: first, cleanliness; second, the removal of the pathological conditions.

Cleanliness is secured by the use of an alkaline or anti-septic solution by means of the spray or an atomizer. I have obtained good results from the use of a solution of Potassium Chlorate (gr. x. to water $\frac{5}{4}$ iv.). When the discharge is purulent and offensive, we may use the solution of Potassium Permanganate (grs. x. to water $\frac{5}{4}$ iv. to $\frac{5}{4}$ viiij., depending upon the condition of the mucous membrane). In place of these we have frequently used Dobell's Solution, which is composed of Sodium Borate, Sodium Bicarbonate *aa.* $\frac{5}{4}$ j., Carbolic Acid grs. xxx., Glycerine $\frac{5}{4}$ j., Aqua Oij.

In young children, we have used as a cleansing agent a solution of Sodium Bicarbonate, by means of a medicine dropper. All solutions should be used warm. After the use of the cleansing solution, the object to be attained in the hypertrophic form is the reduction of the redundant tissue. This is accomplished by the use of the snare, galvano cautery; Chromic or Glacial Acetic Acid, Astringent powders and solutions are also used. The atrophic condition is considered incurable. The object to be attained is, relieving the dryness and overcoming the odor, it being impossible to replace the atrophied tissue.

The crusts and scabs are best removed by using some oily solution to macerate and soften them, after which the nasal douche or spray, with an antiseptic solution, should be used.

If the discharge is very offensive, we employ the solution of Salicylic Acid and Potassium Chlorate; or, instead of this, a weak solution of Carbolic Acid.

Prophylactic treatment consists in preventing attacks of acute coryza, so far as possible, by the use of proper hygienic means.

LARYNGITIS.

Laryngitis is croup of the child. There is much confusion in medical literature in classifying diseases of the larynx in children. We recognize three forms of laryngitis: catarrhal, membranous, and spasmodic. Though alike in some of their features and symptoms, it is well to study them separately.

CATARRHAL LARYNGITIS, OR CROUP.

This is the most common form of the disease in our western country, comprising, probably, two-thirds of all the cases met with. It varies in intensity in different localities, at different seasons, and in different persons. Thus, in some places it is a very common disease, in the late autumn and early winter, and in the spring, when winter is breaking up; while in some other sections croup is rarely seen.

ETIOLOGY.—The cause of this, as well as other forms of croup, is cold, with its arrested secretion and derangement of the circulation. Age is an important predisposing cause of the disease, which is most common between two and five years of age.

PATHOLOGY.—This is a true inflammation of the mucous

membrane of the larynx, though not of an active character. It is sufficient, however, to cause an increased circulation of blood to it, some impairment of the capillary circulation, and an increased activity of the mucous follicles.

There is but little thickening of the mucous membrane; indeed, all there is depends upon the increased distension of the blood-vessels. We have, therefore, to look somewhere else for the cause of the difficult breathing, which is so prominent a symptom. This is partly owing to accumulations of mucus in the larynx, but principally to contraction of the *intrinsic* muscles of the organ, from the irritation of the mucous membrane.

Thus, post-mortem examination does not show the larynx occluded by structural change, as many would suppose. In some cases, it is true, there are considerable accumulations of mucus, but in most the larynx is sufficiently free for respiration, and we must conclude that the child has been asphyxiated by the spastic contraction of the laryngeal muscles.

SYMPTOMS.—Frequently for a day or two before the attack the child will have had symptoms of cold, with a slight cough. Both the cough and voice are a little hoarse and rough, and would be recognized by a person acquainted with the disease as *croupal*.

The attack of croup occurs most frequently at night, though it may occur in the day time. The child seems to be suffering more with its cold during the evening, but still it is not sick, and it is put to bed without, probably, a thought of danger. But along about the middle of the night the parents are aroused by the child starting out of sleep with difficult respiration, a hoarse voice, and a croupal cough.

The respiration is rough and noisy, the cry hoarse and feeble, except when a great effort is made, when it becomes shrill and piping. At first the difficulty of respiration is

intermittent, but after an hour or two it becomes permanent, and there is a peculiar whistling or gurgling sound as the air passes into and out of the larynx.

As the disease progresses the difficulty of respiration becomes more marked, and the cough is hoarser, has a peculiar metallic tone, and the voice sinks to a whisper. If the child sleeps, mucus accumulates in the throat, the breathing becomes more and more difficult, until at last the child wakes with symptoms of asphyxia. At first the skin is dry, its temperature increased, and the pulse is full and hard. But as the respiration becomes more difficult, a cold, clammy perspiration breaks out, the extremities become cold, and the pulse frequent and feeble. The disease runs its course in from twelve to twenty-four hours, terminating either in a subsidence of the disease or in death.

DIAGNOSIS. — The hoarse, metallic (croupal) cough, with hoarseness and change of voice, is sufficient evidence of croup, but it does not inform us which of the three varieties it is. In mucous croup, there is the slight febrile action, distinguishing it from the spasmodic variety, and there is evidently presence of mucus in the larynx, manifested by the rattling sound heard on auscultation, and, when the patient coughs, distinguishing it from the pseudo-membranous form. The evidence of increased secretion of mucus in the throat is the diagnostic feature of this disease, though other points of distinction will be named when we describe the two other forms.

PROGNOSIS. — Though some cases of mucous croup are very severe, and require careful and close attention, yet we may regard the prognosis as favorable. I do not think the mortality should exceed from two to five per cent.

TREATMENT. — Three methods of treatment may be pursued, and any one of them will give success if properly car-

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~~rich meat, etc., if the patient is weak, and we will consider this first. The best way to accomplish our first object is to give better respiration; second, to lessen inflammation, and thereby get a more rapid removal, and at the same time, the vessels of the part. For this purpose, in small doses frequently repeated, we find its effects —~~

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Aconite alone is the principal ~~remedy~~ ~~in~~ ~~the~~ ~~second~~ ~~plan~~ ~~of~~ ~~treatment~~. I have no doubt of its action in this case, even in small doses, when given it in the proportion of: 16 Aconite gr. j. to water 5 fl. oz., a teaspoonful every fifteen minutes. This may be used in some cases in the proportion of gr. 1 to gr. 10, to water 5 fl. oz., and alternated with the Aconite. Bichromate is frequently combined or used in alternation with either of these. We use 1 gr. to water 5 fl. oz., a teaspoonful every fifteen or thirty minutes.

The external remedy in this case, as well as in ~~the~~ ~~other~~, is the application of the Stillingia Liniment to the throat over the larynx. It may be applied with the finger or a piece of soft flannel or cotton, and the application repeated every half-hour or hour. In some cases this remedy locally applied is all-sufficient for a cure, and relief will be noticed within an hour. Occasionally we administer it internally in doses of half a dram to one drachm on sugar; it may be repeated every half-hour or hour. In families where croup

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is of frequent occurrence, it is well that the mother have a bottle of Stillingia Liniment, and be in readiness to use it on the first appearance of hoarseness.

When the breathing is very difficult, hot water applied assiduously to the throat with flannel relief is obtained. This part of the treatment is of great importance, and requires that the application be constant, and that the surface is not allowed to become dry by exposure as the cloths are changed, or by the clothing.

The third plan of treatment is by the use of the vapor of Water and Vinegar being the basis selected as the case seems to demand. The apparatus or croup kettle is an excellent instrument for using inhalations in this case, though if it is not at hand we may improvise our means from a tin vessel containing the fluid and a hot iron to raise the vapor. In the spray apparatus we use a preparation of Pepper, parts of Vinegar and Water, in the cup; or, if there is no pepper, whistling, Lime Water. The ordinary inhalation may be of Vinegar and Water, or of an Infusion of Tansy.

With either of these means the hot application to the throat is important. Or, when it can not be conveniently employed, or we are afraid to trust the nurse, we may use the Compound Stillingia Liniment, or, in place of this, a cloth sufficiently large to cover the throat and the chest is spread with Lard and freely sprinkled with the Compound Powder of Lobelia and Capsicum, and applied.

PSEUDO-MEMBRANOUS LARYNGITIS.

This form of croup is, fortunately, of not so frequent occurrence, as it is much more severe than the ordinary croup, and usually will terminate fatally.

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a large majority of cases there is sufficient thickness to account for the accessory function, and we must therefore consider the cause of the tissue beneath the skin.

SYMPOTMS.—The coming on of membranous croup may sometimes last two or four days, or even a week. The child is sick, and is playing about the house as if it had a cold, and a slight hoarseness is noticed. There is no notice, however, of a peculiar manner of breathing, or cry, and cough, but more especially of whistling respiration. This whistling respiration may be heard across the room.

The attack of croup most frequently comes on as in the other cases. In the first stage there is more hoarseness of voice than in somewhat croupal, but as the child is not sick, the parents do not suspect it is but a cold, and will give nothing to the child.

As time passes the child begins to have difficulty in breathing, has slight attacks of coughing, and is clearly croupal. In another stage the child starts and assumes a sitting position, and has difficulty in breathing from the attacks of coughing.

The symptoms are now very evident. The breathing is sibilant or whistling, and difficult; the voice roughened, the cry shrill and piping, and the child is uneasy.

As the disease progresses the child has all these symptoms, but especially the whistling respiration which is constant. The coughing is continuous.

the trachea and larynx, stenosis sooner results. Unfavorable symptoms are increasing cyanosis, feeble and irregular pulse, and the development of bronchitis or bronchopneumonia.

TREATMENT.—The indications of treatment in this case are: To produce relaxation of the intrinsic muscles of the larynx, and thus give freedom to the respiration, while we pursue the main treatment, to lessen inflammatory action, and obtain free secretion of mucus, for the purpose of effecting the detachment of the false membrane; and, finally, to effect the removal of this.

To fulfill the first demand, we employ inhalations of the vapor of Water and Vinegar or Lime Water, or a saturated solution of Pepsin, as will be hereafter named. With this we direct the continuous application to the throat of flannel cloths wrung out of hot water, in the meanwhile bathing the throat with the Compound Stillingia Liniment. These are important means, and should never be neglected.

There are two plans of accomplishing the second desideratum. The one is by the use of Veratrum or Aconite, aided by inhalations of Lime Water, and is a very good treatment, and much pleasanter than the use of nauseants. We prescribe the Veratrum in the proportion of gtt. x. to Water $\frac{3}{4}$ iv., a teaspoonful every fifteen minutes, until it produces a marked influence upon the pulse, then in smaller doses to continue its effect.

Aconite is preferred when the pulse is small and frequent, and is administered in the usual small doses: R Aconite gtt. ij., Water $\frac{3}{4}$ iv., a teaspoonful every fifteen minutes. If the child is very sensitive to the action of the remedy, the dose should be still further reduced, and if we find the lips dry and contracted, and the child grasping at the mouth with its hands, it should be suspended and Veratrum substituted.

In alternation with this we use Potassium Bichromate, gr. j. to Water ʒiv., a teaspoonful every fifteen minutes to half hour, lessening the dose should it produce nausea.

At times other remedies are called for, especially when there is diphtheria of the tonsils or pharynx.

If the tongue is pallid and shows small spots of red, Phytolacca may be combined with the medicine. If the little patient is dull and stupid and wants to sleep, give Belladonna. If it has a sharp stroke of pulse, and moves its head restlessly backward and forward, throwing it backward as if it would bury the occiput in the pillow, give it Rhus. This remedy is also indicated by the shrill cry, as if frightened, and sudden starting from sleep. Gelsemium is indicated by the flushed face, bright eyes, and contracted pupils, with restlessness and great irritation. These remedies are secondary, it is true, but it is a case that requires all that we can do, and if by one of these we strengthen the Aconite and Veratrum, we give our patient an additional chance.

What the physician needs, most of all, is a steady hand. The treatment requires time, and we must not get excited. If the patient is growing no worse, we should feel satisfied for a time; if there is but a slow improvement, as marked by more ease of respiration, a better circulation, warmth and moisture of feet, legs and forehead, we will feel encouraged and hold fast to the treatment.

The use of Lime Water or a solution of Pepsin as an inhalation is a very important part of this treatment. It is claimed that it alone is sufficient to arrest the inflammatory action and cause the detachment of the membrane; and we have employed it with success when other means have failed. We use the steam atomizer or a croup kettle beneath a tent, and marked relief of the dyspnoea follows its use. Even in fatal cases it gives some relief to the urgent

symptoms. The inhalation should be repeated every fifteen or twenty minutes, as the urgency of the case demands.

Success in the treatment of pseudo-membranous croup, whatever means may be pursued, depends upon keeping the larynx relaxed to permit aeration of the blood, until in the course of time we get the detachment of the false membrane.

In cases that baffle our medicinal means, either intubation or tracheotomy, by relieving the difficulty of respiration, stays the fatal issue until the inflammatory action has subsided. Intubation, owing to its success and to the fact that it is not a cutting operation, has almost superseded the latter one. The operation should not be delayed when indicated by the steady progress of the difficulty of respiration.

SPASMODIC LARYNGITIS.

This is the common form of croup. It is not so severe as acute catarrhal laryngitis, and ordinarily patients recover without difficulty. It is also known as spasmodic croup, and improperly as laryngismus stridulous.

ETIOLOGY. — Spasmodic croup is frequent up to the fifth year, some children seeming to have a predisposition to such attacks. It occurs in children who are well nourished, as well as in those who are poorly nourished and weak. It is frequently associated with enlarged tonsils and adenoids of the pharynx. The exciting cause is cold, sudden change of temperature, exposure to an east or north wind, sitting in a draught, irritation of the digestive apparatus, etc.

PATHOLOGY. — In spasmodic croup there is irritation of the mucous membrane of the larynx, with determination

of blood, or in some cases a slight superficial inflammation. The irritation is sufficient to excite spasmodic contraction of the muscles of the larynx, hence the symptoms of croup. In many cases the irritation extends to the bronchial tubes as well, and they are more or less contracted. Thus, while the difficulty of breathing is principally laryngeal, it may be to a limited extent asthmatic.

SYMPOTMS.—In this case there are usually but slight symptoms of cold before the attack. Frequently there is slight hoarseness in the evening and a little cough, though not sufficient to attract attention. The child is put to bed, and sleeps for an hour or two, then becomes restless, and finally wakes with a start, suffering severely from difficult breathing.

Now the breathing is stridulous, the cough hoarse and croupal, the voice hoarse or whispering, and the cry shrill and piping. The skin is soft and moist, the pulse soft and regular, and the nervous system shows no traces of excitement. In a few minutes the child breathes easier, and may fall asleep, but the period of ease is short; a paroxysm of cough occurs, and the breathing is as difficult as before. Thus the disease will continue for hours, broken up into exacerbations and remissions, until finally, the paroxysms becoming lighter and lighter, the breathing is wholly relieved, and nothing is left but a slightly hoarse cough.

DIAGNOSIS.—The diagnosis of spasmodic croup may be easily made if we notice: first, that there is an entire absence of febrile symptoms; second, that it is remittent in character. There is an absence of the mucous rattling, as in mucous croup, and the extreme dryness of respiration and cough, as in the pseudo-membranous; and neither in the respiration nor in the cough do we detect any evidences of change in the condition of the mucous membrane, as is so distinct in the other two forms of croup. On the con-

trary, all the symptoms point to irritation of the intrinsic muscles of the larynx, and the consequent diminution of its caliber, as the true condition.

PROGNOSIS.—The prognosis is favorable. For, while in exceptional cases the impairment of respiration may be so great as to destroy life, in the majority recovery would occur without aid from medicine.

TREATMENT.—As the object of treatment in this instance is to produce relaxation of the spasm, the treatment by the use of nauseants is employed. I prefer preparations of Ipecac, as its action is speedy, without much prostration. The Compound Tincture of Lobelia and Sanguinaria (King's Acetous Emetic Tincture) is a very good remedy. It should be given in doses sufficient large to produce nausea, but always short of emesis.

In the milder cases the administration of Stillingia Liniment, in doses of one drop, repeated every quarter or half hour, with its external application to the throat, will be sufficient to arrest the disease. In giving this, it is dropped on sugar, which is dissolved in the mouth and swallowed without water.

Spasmodic croup is frequently sympathetic, and repeated attacks occur, much to the surprise of the physician. There is an irritation of the stomach requiring treatment, or the patient wants Sodium Sulphite or Sulphurous Acid to remove an unpleasant coat from the tongue (and a similar unpleasantness from the stomach), or it may be troubled with worms and require Santonine with Podophyllin.

In some of these cases the disease is distinctly periodic, and Quinine should be given in full antiperiodic doses. In other cases the recurrence of the disease is prevented by the administration of Ammonium Bromide 3ij., Water 3iv., a teaspoonful every four hours.

In still other cases the croup is the result of a suppressed or the retrocession of an eruption. These cases will be reached by the administration of small doses of Aconite with Belladonna, and sometimes by sponging the surface with hot water.

ŒDEMA GLOTTIDIS.

Œdema glottidis, or submucous laryngitis, may occur at any age, but is most frequent in childhood. It is not met with very frequently; indeed, many physicians will practice a lifetime without seeing a case. While the two conditions are not identical, they are so closely associated they should be considered together.

ETIOLOGY.—This disease seems to be dependent upon cold. As it occurs in feeble children, therein manifesting a tendency to disease of the throat, it is probably owing to debility of the tissues. This view is partially supported by the fact that it has been known to follow the internal use of Iodine. It is also caused by the irritation produced by foreign bodies, the inhalation of steam, inflammatory disorders of the glands of the neck, and as a complication of nephritis.

PATHOLOGY.—The disease is undoubtedly inflammatory in its character, but the inflammation is subacute, and involves the submucous tissue. In its progress there is effusion into this tissue, which becomes swollen, and where this tissue is loose, as the inward surface of the epiglottis and the upper portion of the larynx, it produces such engorgement as to obstruct the passage of air. As this distension is greatest in the epiglottis, the difficulty is much greater in inspiration than in expiration.

In true œdema there is simply an effusion into the submucous tissue of the aryteno-epiglottic folds, causing them to swell so as to be a serious obstruction to respiration.

This is a dropsical condition, and usually occurs in nephritis.

SYMPTOMS. — The disease commences with a continually increasing impediment to respiration, and a feeling of fullness and constriction of the throat, and a continuous desire to clear the throat, as if the irritation were caused by some foreign body. The voice becomes hoarse, then croupal, and afterward sharp, stridulous, whispering, and is then lost entirely. There is a hoarse, convulsive cough, with fits of suffocation, causing great agony.

The most marked feature of the disease is that, while inspiration is prolonged, stridulous, and exceedingly difficult, expiration is comparatively easy. This feature is so constant as to be pathognomonic.

There is no fever, but as the disease progresses the pulse becomes more frequent, small, and irregular. The difficulty of breathing increases, the paroxysms of coughing and suffocation are more frequent, symptoms of asphyxia appear, the cerebral functions are disturbed, and at last death ensues from inability to inflate the lungs.

In true oedema there are also symptoms of the original disease.

DIAGNOSIS. — The diagnosis of this disease will be readily made, if it is recollected that the difficulty is in inspiration, while expiration is comparatively free. In the later stages of the disease, when it is likely to prove fatal, the diagnosis will be more difficult.

PROGNOSIS. — Is unfavorable. Oftentimes it proves rapidly fatal without any warning whatever. Where the infiltration is localized, it is less likely to prove fatal than when involving all the tissues.

TREATMENT. — The treatment of this disease will be wholly different from that adopted in croup, being stimu-

lant instead of relaxing. We should dry-cup the throat and upper part of the back, repeating it if the case be serious; applying to the throat and breast a cloth spread with lard and sprinkled with the Compound Powder of Lobelia and Capsicum, changing it two or three times daily. A Mustard foot-bath may be used with good effect, and repeated two or three times, following it by the application of dry heat. We guard against coldness of the extremities, which so frequently follows the ordinary use of the foot-bath, and which almost invariably increases the disease.

If the pulse is frequent and small, we will give Aconite, combining with it Apocynum, as: By Aconite gtt. ij. to gtt. v., Apocynum gtt. iij. to gtt. xv., Water $\frac{3}{4}$ iv., a tea-spoonful every hour. Apocynum in quite small doses will act upon the bowels; but if the bowels are torpid, the proportion of this remedy may be increased. Phytolacca is sometimes indicated by the soreness of the mouth and throat, and engorgement of the lymphatic glands. Belladonna is a good remedy in some cases, the indication being the dullness and stupor, and inclination to sleep.

In some cases stimulant doses of Lobelia, with some pleasant aromatic to prevent nausea, may be prescribed.

This may be aided by the use of stimulant inhalations with the spray apparatus. A very good inhalation may be formed by adding Carbolic Acid, grs. v., to Water $\frac{3}{4}$ iv., or Ammonium Hydrochlorate, grs. x., to Water $\frac{3}{4}$ iv.; or, in place of them, Lime Water of full strength may be employed.

The external application of ice, and cracked ice kept in the mouth, the patient being kept warm, and Jaborandi or Pilocarpine internally, in order to produce diaphoresis, have afforded relief.

Tracheotomy or intubation may be performed as a last resort.

ACUTE BRONCHITIS.

Acute bronchitis is of frequent occurrence in childhood, and forms the larger part of those cases which are known as lung fever. It occurs as a primary affection, or secondarily in many of the acute infectious diseases.

Etiology.—Inflammation of the bronchial tubes arises from the same causes that produce inflammation in other tissues. Exposure to cold, especially to the north or east wind; sudden changes of temperature, etc., are the common exciting causes. It occurs at all ages, and is common in children suffering from rachitis and who are ill nourished. It always accompanies measles and influenza, and is quite common in pertussis, scarlet fever, and diphtheria.

Pathology.—The inflammation is confined to the bronchial mucous membrane, and in some cases involves but a portion of it, but in severe cases it extends to all the bronchial tubes.

The pathological changes consist in a congestion and swelling of the mucous membrane and an arrest of function. Afterward there is increased activity, with an exudation of mucous and pus cells. As a rule, the bronchi in both lungs are affected. It is usually confined to the larger and medium sized bronchi. When it extends to the smallest, it is called capillary bronchitis. In this form the air vesicles are usually involved, and the disease is more properly broncho-pneumonia, under which name it will be described.

When children die of the disease, post-mortem examination shows the mucous membrane thickened and softened, and the bronchial tubes more or less clogged with accumulated mucus and muco-pus.

Symptoms.—For a day or two the child has symptoms

of cold, with some cough. A change in the character of the cough is then noted, and with this change there is an increased rapidity of breathing.

With the irritative cough, that repeats itself every few minutes, febrile reaction comes up briskly, the temperature reaching 100° F. to 102° or 104° F., according to the severity of the attack, and the respiration from 40 to 50. The skin becomes hot and dry, the pulse is hard and frequent, and the child irritable and restless; the urine is scanty and the bowels constipated, the tongue having a more or less uniform white coat. The fever gradually increases to the third or fourth day, remains stationary for from one to four days, and then declines as the inflammation passes off.

The cough is dry and the respiration dry and whistling, and there is no expectoration in infants; as the secretion is coughed up and swallowed.

By the end of the second day, in older children, we notice that there is slight secretion of a transparent, tenacious white mucus, streaked with blood in some cases. This is increased the third day, and by the fourth it commences to assume a yellowish, opaque appearance. Up to this time the secretion of mucus seems rather to increase the cough, as it is a source of irritation and is raised with difficulty. After the mucus becomes yellow and opaque, it is raised with less effort, and the cough is not so hard or so frequent, and respiration is much easier. From this time there is a gradual decline in all the symptoms, and the patient is convalescent from the seventh to the fourteenth day of the disease.

Physical Signs: In the first stage, when the ear is applied over the chest, there are marked sibilant and sonorous rales. When secretion is established these give place to mucous rales. These are usually heard over both

lungs, but best between the scapulae and the infraclavicular regions. By palpation a marked bronchial fremitus is felt. The percussion note is normal or slightly exaggerated.

In the severer cases, especially when the smaller tubes are involved, the symptoms are all more severe, and it is sometimes almost impossible to distinguish this disease from broncho-pneumonia. There is cough, dyspnoea, accelerated breathing, fever, and prostration. The dyspnoea may be quite marked, and there may be slight cyanosis; the temperature quite high (103° to 104° F.), and the rapidity of the respiration increased out of proportion to the temperature.

In infants and delicate children, in addition to the prostration, there may be dyspnoea, apathy, dullness, and stupor, the result of the deficient aeration of the blood. In this case death is almost certain to result.

DIAGNOSIS. — The diagnosis, as a rule, presents no difficulty. Bronchitis is, as a rule, bilateral, pneumonia unilateral. In bronchitis the rales are diffused over the entire chest; in pneumonia they are localized. In pneumonia the temperature is higher, the duration more prolonged, and the symptoms more severe.

PROGNOSIS. — Though a severe disease, we do not look upon it as a fatal one, though occasionally, from its intensity, it becomes difficult to manage. If secretion commences with an abatement of the fever, the case is progressing well; but if symptoms of imperfect aeration of the blood are developed, with delirium, the case is a grave one.

TREATMENT. — The treatment will be directed to lessening the frequency of the pulse and lowering the temperature, relieving the irritation and stopping determination of blood to the bronchi and lungs, relieving disorders of the nerve centers, and establishing secretion. It is well to

have the subject thus clearly in mind, that we may be able to select our remedies.

Quite as essential is it that we know what *not* to do, and what to keep friends from doing.

To control the pulse we administer Aconite, if the pulse is small and frequent (Aconite is the child's sedative); Veratrum, if it has volume and is frequent. They are both good remedies, and relieve irritation of the lungs and bronchi as well as the general irritation which gives the frequency of pulse.

If the patient suffers pain (this may be known by the expression of the face and the cry), Bryonia should be added to the sedative. If the patient has a persistent cough, with whistling in the smaller bronchi, and if later there are blowing sounds, with free secretion, Ipecac should be employed. If there is an oppressed respiration, with abundant mucous secretion after some days, Lobelia is the remedy. A very hot skin, seeming almost on the point of breaking out into perspiration, and a full, oppressed pulse, call for Eupatorium Perf.

The remedies that relieve disorders of the nerve centers are suggested by symptoms that force themselves upon our notice. The extreme restlessness, sensitiveness to impressions, evidences of pain, sleeplessness, with flushed face, bright eyes, contracted pupils, and increased heat of the head, call for Gelsemium. The same restlessness and irritation, but with contraction of the frontal muscles, sharp pulse, and reddened papillæ at tip of the tongue, call for Rhus. The dullness and inclination to sleep, want Belladonna.

In addition to the remedies which influence the pulse, and relieve irritation of the nerve centers, and lessen the temperature, we employ baths to reduce the heat of the body and improve the functional activity of the skin. The bath may be soap and water, the alkaline bath (Potassium

Bicarbonate is the best), the acid bath, or fatty inunction. The temperature of the bath is to be determined by the condition of the patient, as heretofore indicated.

In severe cases we like very much the oil silk jacket or a cotton jacket. We frequently envelope the chest in a cotton jacket and leave it on until convalescence is assured. Especially do we use it if there is any tendency to a capillary bronchitis.

Sometimes sponging the chest with hot water for a few minutes, and then covering it with flannel, exerts a good influence. A favorite local application, however, and one that is always safe, is the soft cloth spread with Lard, and sprinkled with the Compound Powder of Capsicum. This may be renewed twice a day.

If the irritation of the bronchi is so great as to cause much difficulty of respiration, or if the cough should be so harassing as to prevent sleep and aggravate the fever, we may relieve the patient by the use of inhalations. The steam atomizer or the croup kettle are admirable apparatus in this case. The vapor of water alone is sufficient in most cases; or in some we may use an infusion of Hops, of Tansy, of Poppy Heads, Creosote, or Eucalyptus. The inhalation may be repeated as often as every one, two, or three hours, until the patient has relief.

The prophylactic treatment, and the measures adopted to prevent relapses, to which these children are so prone, will consist of care in the sleeping room — that it be warm, as well as well ventilated; that the feet be kept warm and dry, and that flannels be worn. Care should be exercised to prevent attacks of acute rhinitis, and to prevent its extension downward when it does occur.

CHRONIC BRONCHITIS.

We occasionally meet with a case that may be classified as chronic bronchitis, though it does not present all the

symptoms of that disease in the adult. Like the disease in the adult, it is associated with an impairment of the general health, and may terminate in infantile phthisis.

ETIOLOGY.—The cause of this bronchial disease in the child is the frequent repetition of attacks of acute bronchitis. At first the patient recovers from the attack well, but as it continues to be repeated the recovery is tardy, and less and less perfect, until finally we have the condition of the respiratory organs under consideration. In other cases the disease is the sequel of measles, pertussis, or a chronic cardiac condition. Rickets, malnutrition, and the condition known as lymphatism are the constitutional conditions in which an acute bronchitis are most liable to terminate in the chronic form.

PATHOLOGY.—The disease is not strictly a chronic inflammation, but rather a condition of the mucous membrane resembling that produced by such inflammation. The nutrition of the mucous tissue is impaired, the circulation is sluggish, the tissue thickened and of a dull-red color, and there is an increased mucous secretion which clogs up the bronchial tubes. In the severer cases the secretion is muco-pus or pus, and may be in considerable quantity and quite offensive.

There may be dilatation of one or more of the bronchi and an atrophy of the mucous membrane, and a consequent lack of secretion. Other organs are involved secondarily, as the right side of the heart or of the pulmonary structure.

SYMPTOMS.—Our attention is called to a bad cough, from which the child has suffered some weeks, and which has been very intractable. The cough is at times paroxysmal, and may be mistaken for pertussis. We notice that it is loose and somewhat hollow, and that more or less mucus is brought up by the act of coughing, but generally swallowed. If there is an abundance of expectoration of

pus or muco-pus, bronchiectasis should be suspected. There is no fever nor dyspnoea, nor much emaciation. The duration is indefinite, but the advent of summer brings relief to these patients.

Applying the ear to the chest, we hear mucous rales—indeed, when secretion is free, it had better be called a gurgling or rattling—as the air passes into and out of the lungs.

DIAGNOSIS.—The diagnosis is to be made mainly from pertussis. It may be impossible to distinguish it from a mild attack of pertussis, excepting by the course of the disease. From tuberculosis it will be distinguished by its non-febrile course.

PROGNOSIS.—The prognosis is favorable, unless it be accompanied by incurable conditions. Even then the bronchial conditions can often be relieved, although some permanent structural changes can not be eradicated.

TREATMENT.—The treatment of this disease requires considerable care, and all harsh and unpleasant remedies should be avoided. There are two principal objects in view—to modify the irritation and lessen the cough, and to improve the appetite and digestion, and thus get better nutrition and restore the structure of the part affected.

If both can be accomplished by one class of remedies, it will be best. We do not advocate the use of expectorants, and feel confident that better results can be attained by selecting our remedies in accordance with the object in view. For the first object (the relief of the cough) there are many drugs we will find useful. Frequently we will attain the object by the use of Collinsonia, especially when the cough is associated with some laryngeal irritation. Stillingia Liniment may be given in doses of half to one drop on sugar, every three or four hours, when there is

frequent pulse, difficult respiration, and impairment of the voice, with an irritating cough.

When the disease has arisen from measles, *Drosera* will be found a valuable remedy. The cough is loud and explosive, with dryness of the air passages. If there is a very free secretion of mucus, with much rattling in the chest, *Lobelia* may be employed.

In some cases *Bryonia* seems to exert an excellent influence in quieting bronchial irritation, checking the cough, and improving the general health, when there are sharp pleuritic pains, increased by cough. *Grindelia Rob.* will relieve when there is a feeble circulation, asthmatic breathing, and a hard, dry cough.

Frequently the inhalations, as advocated in acute bronchitis, will give these patients relief from the paroxysms of coughing when all other remedies fail.

To attain the second object, the improvement of nutrition, we find Cod-Liver Oil of great service. When indicated by the paleness and emaciation, it will also help in allaying the cough.

Syrup of Hypophosphites is also a good restorative when the surface is pallid and waxy, the extremities cold, nutrition feeble, and there is general debility and weakness.

Iron, of which the Syrup Iodide is the best preparation, will at times be called for by the enlargement of the lymphatic glands, and anaemia.

Inunction with Quinine is an excellent measure in those cases in which there is feeble innervation or impaired circulation. Generally fatty inunctions serve a better purpose than the ordinary use of baths; the surface being rubbed freely with the hand or with flannel. The Cod-Liver Oil may be used in this way when indicated.

Exercise in the open air, the free admission of light and sunshine to the room, and a nutritious diet are important aids to the cure.

PNEUMONIA..

Inflammation of the lungs is met with most frequently during the winter months, and like acute bronchitis, it forms a portion of those cases known as lung fever. In some localities it is a very common disease, but in others it is seldom met with.

It occurs as a primary disease and as a complication of the acute infectious diseases. Pneumonia is divided, from an anatomical standpoint, into (a) broncho-pneumonia, known also as catarrhal or lobular pneumonia; (b) lobar pneumonia, known also as croupous or fibrinous pneumonia. They differ as to the parts of the lungs involved and as to the nature of the changes. These changes will be briefly described when considering the pathology.

ACUTE BRONCHO-PNEUMONIA.

Broncho-, catarrhal, or lobular pneumonia, or capillary bronchitis, is essentially the pneumonia of infancy. It is an inflammation of the terminal bronchus and of the air vesicles, which make up a pulmonary lobule.

ETIOLOGY.—Age seems a factor, for, while the disease is met with at all ages, it is much more frequent in infancy and childhood. It is said that it is only in infancy that it is a primary disease, and that later in life it is secondary, being a serious sequel or complication of the infectious diseases. Season has its influence, as a large majority of the cases are seen during the cold months, and especially among those poorly clothed and living under poor hygienic conditions. An exciting cause is cold, either from direct exposure or from sudden alternations of temperature.

PATHOLOGY.—The essential or constant lesion of broncho-pneumonia is an inflammation of the walls of the bronchi and of the air spaces surrounding the inflamed

bronchi. The process usually begins in the larger tubes, and extends to the smaller ones, involving a pulmonary lobule or extending to the air vesicles.

The walls of the air spaces are thickened and their cavities filled with fibrin, pus and epithelium. The inflammation is not everywhere equally severe, being much more marked in some parts of the lungs than in others. In some cases there are no other changes than simply a congestion. In others there is an inflammation of the mucous membrane, diffuse consolidation of parts of the lung, pleurisy, and areas of collapse. The trachea and larger bronchi are congested and coated with mucus, while the smaller bronchi contain pus, their walls being thickened and infiltrated. Around the smaller bronchi are zones of congestion or hepatization. These zones of pneumonia may be larger, so that a section of the lung is mottled with whitish nodules, each corresponding to a cut bronchus surrounded by its zone of pneumonia; or between them may be diffused areas of hepatization which render the lung solid.

This thickening and cell infiltration which exists in the walls of the bronchi may also extend to the walls of the air spaces. Their walls are then thickened and the cavities filled with pus and epithelium. The portions of the lungs not hepatized are congested and oedematous. There is often a thin layer of fibrin upon the pulmonary pleura, and the bronchial glands are the seat of simple or tubercular inflammation.

Broncho-pneumonia may terminate in resolution, which, when it begins, takes place more rapidly than in lobar pneumonia. When it is delayed, and the inflammatory process is confined to the apices, especially when following measles, pertussis or diphtheria, it is usually tubercular. It may terminate in fibroid changes, or chronic broncho-pneumonia, which is a common sequence of the tubercular form.

SYMPTOMS.—Broncho-pneumonia does not pursue any special course, and its duration also varies greatly, at times terminating fatally within less than twelve hours, and again pursuing an intermittent course, much resembling tuberculosis.

Much confusion has likewise arisen in describing the disease, owing to its being classified by many as a bronchitis. The disease presents to us different types and variations in physical signs, due to the amount of lung tissue involved and the consequent amount of hepatization.

It is seen at any age, being most common among young children, and may be either primary or secondary.

In the most severe cases, the symptoms are few and indistinct, the duration being less than twenty-four hours. The marked symptoms being: high temperature, prostration, rapid respiration, cyanosis, and orthopnoea. We have seen such a case terminate fatally in less than ten hours from the onset.

The temperature varies from 104° to 106° F., the pulse being rapid and feeble. Respiration ranges from forty to eighty per minute, and is labored; in fact, orthopnoea, the child maintaining a sitting posture until the stupor becomes quite profound. The difficulty of respiration is so marked that the soft parts of the chest walls recede.

Owing to the deficient aeration of the blood, the lips and finger nails become purple, and finally the entire body shows the effects of the interference with oxygenation by the dull, leaden hue of the skin.

The intellect also suffers, there being at first dullness and apathy, followed by stupor and death. Occasionally a child will withstand the ordeal of this violent onset, the disease then pursuing the course of an ordinary bronchopneumonia.

In these sudden and severe attacks, the physical signs are often obscure and indefinite, usually being limited to

fine mucous or subcrepitant rales, heard best between the scapulae.

In an ordinary attack of broncho-pneumonia, the inflammation begins in the medium-sized and smaller bronchial tubes, and extends to the air vesicles.

The attack begins with an indisposition for a day or two, in which the child is feverish, has some cough, and a little shortness of breath. If there is a chill, it is ill-defined and scarcely noticeable. There may be some gastric derangement, as vomiting, and possibly some nervous symptoms, rarely a convulsion.

The fever is not unduly high, ranging from 101° to 103° F., unless the disease is pursuing an unfavorable course, when the temperature rises steadily until death.

The skin is dry, and the cough painful and distressing. The pulse rapid, is at first full and strong, becoming in unfavorable cases extremely rapid, weak and compressible. The respiration is very fast, ranging from sixty to eighty per minute, and dyspnoea becomes distressing. Cyanosis soon shows itself by the purple hue of the lips and finger tips, and the face has an anxious expression. When it terminates fatally, which in severe cases it will do on the third or fourth day, the cyanosis steadily increases, the child becoming dull and stupid; the cough and efforts at breathing cease with the numbing of the intellect, and death results. In the favorable cases, there is a gradual improvement of the urgent symptoms, and the case pursues the course of an ordinary broncho-pneumonia.

Fortunately, all cases are not so severe in their onset, but resemble more an ordinary case of lobar pneumonia in the constitutional symptoms, though not in the physical signs. There is always the cough, elevated temperature and pulse, rapid respiration, dyspnoea, and some cyanosis.

When secondary, it follows the acute infectious diseases, most frequently measles or pertussis. The physical signs

of broncho-pneumonia vary according to the amount of consolidation. In the severest type, they may be limited to only a few subcrepitant rales, or to a rude breathing. Ordinarily, the congestion of the lung causes feeble respiration over the affected areas, and very slight dullness; and sonorous and sibilant rales are heard at the margins of these congested areas. Where there are areas of consolidation, the percussion note over them will be dull, but the dullness is circumscribed and its extent governed by the extent of the consolidated area. Palpation over it may give vocal fremitus. Over the consolidation there may be heard bronchial breathing and voice, but the evidences of a bronchitis still persist, as shown by the coarse and fine rales, heard at the margins of these consolidated areas, or scattered over the chest, but, as a rule, heard best behind.

DIAGNOSIS.—The rapid, labored breathing, elevated temperature, and cough point to the lungs as the seat of the disease.

It is still to be differentiated from a bronchitis or lobar pneumonia.

From an ordinary bronchitis, it is recognized by the severity of the symptoms, and from the fact that the rales of a bronchitis are heard, as a rule, all over the lungs, both in front and behind, and that the prostration is less; neither is dyspnea so intense. The rales of broncho-pneumonia are usually limited to the interscapular space. From lobar pneumonia, we recognize it first by the age of the patient, broncho-pneumonia being found, as a rule, in infants and children under five years of age.

Broncho-pneumonia is usually bilateral; lobar, unilateral.

The onset of the first is generally abrupt; the latter more insidious, and terminates by a crisis; the former by lysis.

No significance can be placed on the sputa, as in children

it is coughed up as far as the trachea or pharynx, and swallowed or inspirated back into the lungs.

PROGNOSIS.—Broncho-pneumonia is a very serious disease, and is often fatal when occurring in children enfeebled by a constitutional disease. Its fatality seems to be influenced also by the surroundings, and, if secondary, upon the character of the primary disease.

The factors which govern the prognosis are: the height of the temperature, condition of the nervous system, and the presence or absence of pneumonia.

TREATMENT.—We can not conceive of any disease which will tax the resources of the physician more than a bad case of broncho-pneumonia. The only measures to be employed as a prophylactic treatment are: attention to the respiratory passages during attacks of the acute infectious diseases; protection against exposure during convalescence from them, and a careful attention to every attack of bronchitis, occurring in children predisposed to it. A child suffering from broncho-pneumonia should be kept in a well-ventilated room, of even temperature, in which the air is kept moist, by vapor if necessary.

Locally, a mush jacket, covered by oiled silk or glazed paper, should be applied during the acute stage. After the urgent symptoms have passed, this should be replaced by a cotton or oiled silk jacket, until convalescence is assured. Some prefer the greased cloth, dusted with the Comp. Emetic Powder.

Internally we give such remedies as are indicated. The fever is treated by the special sedatives. Aconite, when the pulse is feeble and rapid; Veratrum, when it is full and bounding. These remedies have not only an influence upon the temperature, but, when used in small, frequent doses, have a controlling influence upon the heart and capillary circulation as well. Should there be any pleuritic

complication, as would be shown by the catchy, jerky respiration, every respiration being accompanied by a moan, we would combine with either of the above Bryonia. If the skin be hot dry, and pungent, Asclepias.

For the cough, use Lobelia, when the dyspnoea is marked, the rales are dry, the heart's action labored, and the pulse small and feeble. It can be combined with any of the above, or used in alternation. We would not use it for its emetic action, as we believe it to be dangerous to do so in the graver cases; though when given to nausea, relief is often obtained.

Should the cough show abundant secretion, and the rales be moist, and there is weakness or prostration, use Ipecac.

Pilocarpus has been recommended when there is elevated temperature, a sharp, hard pulse, dry skin and mucous membranes, and dark-colored urine. It is a strong relaxant and diaphoretic.

The nervous system will call for Gelsemium, when the patient has a flushed face, bright eyes and contracted pupils, and is restless and nervous, or if there is convulsive action.

If, on the other hand, there be dullness and stupor, and dilated pupils, we will give Belladonna, which will also have a good effect upon the congestion of the lungs. It might be Rhus Tox., when there is the sharp, shrill cry, sharp, quick pulse, and red, glazed tongue.

Expectorants are not called for, and especially those containing opiates. The remedies enumerated above will do all we could look for from expectorants. Occasionally stimulants are needed. If so, it will be noted by the weak, rapid, irregular heart's action, and weak, compressible pulse. The child will also have difficulty in coughing up the mucus. We then use either the alcoholic stimulants or Strychnine; possibly both. The hot mustard bath will be of advantage in such cases.

In protracted cases, Cod-Liver Oil, the Hypophosphites, Iren or Arsenic will be needed, in connection with a carefully regulated diet; giving only that which is most nourishing and easily digested.

LOBAR PNEUMONIA.

Lobar Pneumonia, known also as Croupous or Fibrinous Pneumonia, Pneumonitis, or Lung Fever, is an inflammation of the parenchyma of the lungs; marked by constitutional disturbances and terminating by a crisis.

Etiology. — Pneumonia occurs at any age, though this form is rare among children under five years of age. Nearly all cases of primary pneumonia above this age are of this variety. Climate has not much influence, as it is found in nearly all climates. Season has some, the larger percentage of cases occurring in the late winter and early spring months, when climatic changes are sudden. The common exciting cause is cold, either from direct exposure or from sudden alternations of temperature.

Pathology. — In this case the inflammation is of the parenchyma of the lung. It affects, as a rule, but a single lobe, and often only a circumscribed portion of that.

For the first two or three days, which represents the first stage, or that of congestion, the lung presents the appearance of determination of blood, the capillaries being full, and the tissue consequently reddened; the lung still floats on water, though not so freely as the healthy tissue. From this time there is a continued increase in its density, the air-cells being effaced by the engorgement of the capillary vessels, and by exudation into the intercapillary spaces and into the air-cells. This is the second or stage of *red hepatization*, and is fully completed by the sixth day. At this stage the lung is a uniformly dark color, solid, and cuts like liver.

In the third stage, that of gray hepatization, the tissues change to a grayish-white color, the surface is moister, and the lung tissue more friable. A more advanced stage of gray hepatization is known as *purulent infiltration*. In this the effused material is formed into pus. The tissues, losing their vitality, soften and are likewise transformed. If we examine a lung in this condition, we will find it soft and friable, and readily lacerated by the fingers.

The cut surface presents a yellow mottled appearance, and when pressure is made upon it an imperfect purulent fluid exudes. In a still further advanced stage small abscesses are formed in the lungs at the site of the diseased lobe.

In the majority of cases, the fourth stage, that of resolution, commences, and the circulation is gradually restored from the circumference to the center, the effused material being taken up as soon as the blood begins to flow freely. Thus the lung is free of both the arrested circulation and the effusion, and becomes again permeable to air. Resolution is usually complete by the ninth day, though in some cases it may be delayed for some time.

When pneumonia affects the left side, there is often associated with it a pericarditis. Pleurisy is also a frequent complication. Meningitis, usually of a purulent type, is a rare complication.

SYMPTOMS. — The onset of pneumonia is usually sudden, but in some cases the child shows symptoms of cold for two or three days before the attack, and is restless and fretful. The onset is marked by nausea, vomiting, headache, and a rapid rise of temperature, in combination with the usual symptoms of fever, as anorexia, thirst, restlessness, rapid pulse, dry skin, and scanty, high-colored urine. Occasionally it may be ushered in by a convulsion or a chill, the latter not often noticeable in children, however. The pulse, at first full and strong, ranges from 120 to 130, and

later becomes weaker, softer, and in some instances irregular. The rapidity of the pulse is of less moment than its character. The temperature varies from 103° to 105° F., the face is flushed, and there is slight delirium at nights, or when the child sleeps. The respirations vary from forty to fifty, or even sixty, and are jerky in character. If the child complains, it will be of a sharp pain in the side. This pain is of a pleuritic origin, and accounts for the jerky respiration; each respiration being frequently accompanied by a grunt. The cough, though present throughout the disease, is not so marked the first day or two, the patient showing a disposition to suppress it on account of the pain.

By the third day of the disease, even a casual observer would notice that the child was seriously sick. The skin is hot and dry, the pulse frequent and hard, urine scanty, bowels constipated, no appetite, a coated tongue, one or both cheeks flushed, and some difficulty in respiration. The cough is usually paroxysmal, and varies from the hacking cough to a deep bronchial cough. Occasionally the child is irritable and restless, but in most cases it lies quite still, even though it suffers, and sleeps with its eyes partly open.

With these symptoms but little changed, the disease continues to the sixth day, when, in a majority of cases, we find an amendment. The skin becomes less dry and hot, the pulse softens and is less frequent, secretion is gradually established, the difficulty of respiration and cough passes away, and by the ninth day the child is free from fever and convalescent.

Such is the typical case of lobar pneumonia as we see it in children. In children under eight or ten years of age we can lay no stress upon the expectoration, as it is seldom available for examination. In older ones it presents the same characteristics as in the adult. At first white and viscid, streaked with blood, it later becomes brownish-red.

and during resolution is abundant and yellow. The pleuritic pain is characteristic, and lasts throughout the disease. Instead of being referred to the side, it is frequently spoken of as being in the region of the nipple, and is aggravated by the cough. Headache and general muscular pains are present during the period of invasion. The temperature pursues a uniformly high range until the crisis, when it may fall below normal. A sudden rise would indicate either the extension of the disease to a new area, the development of pleurisy, or a meningitis.

Cerebral symptoms, such as a convulsion or delirium, early in the disease, are usually of not much moment. When occurring late they are generally of grave significance, and frequently portend a fatal termination.

Herpes of the nose and lips are very frequent, and by many are looked upon as being a diagnostic feature.

The physical signs of pneumonia vary with the different stages of the disease. Inspection during the first stage reveals a somewhat diminished movement of the affected side, which is more marked with the advent of consolidation or hepatization. The patient lies upon the affected side, which position assists in limiting the motion, consequently the pain. The rapid breathing and the evidences of dyspncea are also noted by the dilatation of the nasal alæ and the cyanosis.

Palpation: Early in the disease a pleuritic fremitus will at times be felt. After consolidation has occurred, vocal fremitus is increased. Its absence, however, should not lead one to the conclusion of its non-existence.

Percussion: During the first stage there will be diminished resonance or slight dullness over the affected area, and exaggerated resonance over the remainder of the affected and the unaffected lung. With the gradual increase of consolidation, and consequent absence of air, the dullness becomes more marked over the seat of disease,

whilst the percussion note will be exaggerated over the unaffected lung. With resolution, the dullness gradually disappears, though it may persist in a slight degree for some time.

Auscultation: Early in the disease the respiratory murmur is feeble, and may be entirely absent, a few crepitant rales being heard at the end of a full inspiration. Over the normal lung the respiratory murmur is intensified. When hepatization has taken place, bronchial breathing and voice are heard over the consolidation, but no rales. When resolution begins, and consequent liquefaction, the bronchial breathing is replaced by broncho-vesicular breathing and moist rales of every description.

The termination of a lobar pneumonia in children is usually a perfect recovery. Pleurisy is the most frequent complication, which at times ends in empyema. Chronic pneumonia and tuberculosis are rare sequels of lobar pneumonia in childhood.

DIAGNOSIS.—Lobar pneumonia in its onset is typical. The symptoms above named, cough and difficult respiration, point to the lungs as the seat of disease, while the febrile reaction evidences its inflammatory character. Auscultation during the first three days detects a marked change in the respiratory murmur, which is feeble, and associated later with a marked *blowing* sound, at first dry, afterward moist. From the third to the sixth day the respiratory murmur becomes less and less marked, until at last it is scarcely heard over the seat of inflammation, but is replaced by a blowing sound (bronchial breathing). With this change there is increasing dullness on percussion.

As has been stated, we have less evidence of diseased action from the sputa than in the adult. At first there is dryness of the mucous membrane; after two or three days the secretion is white, tenacious, and has the globular form

so characteristic of the disease in the adult; about the fifth day it acquires a reddish-brown tinge, but rarely has the rusty hue that is seen in the adult. After this time, if convalescence progresses, it becomes yellowish, and resembles the sputa of bronchitis.

In cases of doubt, an examination should be made high in the axilla and at the apex.

It is to be differentiated from broncho-pneumonia and from empyema; from the first named by the characteristics previously mentioned. Lobar pneumonia being unilateral, devoid of rales save in the latter stage, dullness more marked, affected area limited, shorter course; bronchopneumonia, bilateral, presence of rales, dullness slight, longer course, frequently secondary. From empyema by the absence in this disease of all respiratory sound; if heard, they are very feeble and appear distant; the percussion note, instead of being dull, is flat. There is also in empyema deformity of the chest wall on the affected side, effacement of the intercostal spaces, and often bulging, as well as displacement, of the organs, especially of the heart, if the empyema be on the left side.

PROGNOSIS.—The prognosis in the pneumonia of children is quite favorable. Those cases that manifest symptoms of asphyxia early are to be regarded as unfavorable, as are those in which the disease progresses unabated beyond the seventh to the ninth day, which usually indicates a new focus of inflammation, or some complication.

The factors to be taken into consideration in forming the prognosis are: the age of the patient, the extent of the disease, and the presence or absence of complications.

Unfavorable symptoms are: convulsions late in the disease, or late gastro-intestinal troubles; a temperature steadily maintained at 105° F. or over; and an extensive area of consolidation. The involvement of both lungs is exceedingly dangerous.

TREATMENT.—The treatment of pneumonia in the child should be quite simple, as it is not a disease that will be benefited by or bear much medication. The indications are plain—to lessen the frequency and obtain a uniform circulation of the blood, and to establish secretion, and this is done in the order in which they are named.

To accomplish the first object we prescribe the special sedatives, Veratrum and Aconite, in the usual doses, repeated every hour. If the fever runs high, and the pulse is full and hard, the dose of the Veratrum may be doubled until it influences the pulse. All we expect of the remedy is that it will hold the febrile action and the inflammation in check, and after twenty-four or forty-eight hours will cause a gradual decline in both. That action of Veratrum which brings the pulse down in six or eight hours from one hundred and thirty beats per minute to eighty or seventy beats per minute, is not desirable, because it can not be maintained, and because it is opposed to nature's methods of cure.

Again, we note the indications for other remedies which may be added to the sedative solution or alternated with it. Bryonia is given if the child shows evidences of pain in respiration or on coughing; Asclepias, if the skin be hot and pungent; Rhus, if there is contraction of the facial muscles, and a sharp stroke to pulse, which is small and frequent; Lobelia, if there is marked oppression in the chest, and difficult breathing; Gelsemium, if there are evidences of determination of blood to the brain; Belladonna, if the child is dull and inclined to sleep a great deal; Eupatorium, if the pulse is full and oppressed, and perspiration is caused by coughing, notwithstanding the heat of skin; Phytolacca, if patient complains of sore mouth and throat; Baptisia, if the face is full and purplish, the tongue and lips showing the same color.

When the tongue is dirty—a yellowish, glutinous coat

— Sulphurous Acid exerts an excellent influence, and will sometimes be nearly all that the patient will require. Occasionally Sodium Sulphite is indicated, and more rarely Potassium Chlorate. A trituration of Podophyllin (second decimal or first centessimal), in doses short of an action upon the bowels, will give good results in those cases showing fullness of face and tissues generally, and especially fulness of veins, which should be noted.

If the bowels are locked up, it is much better to use an enema to open them.

Ipecacuanha exerts a specific action upon the respiratory apparatus, removing irritation and stopping determination of blood. It has been used alone with marked success.

As the disease advances, if there be a very free secretion, with much rattling in the chest, and difficulty of breathing from obstructed bronchial tubes, the preparation of Lobelia, with Comp. Tinct. of Lavender, will answer a most excellent purpose. In this case the cloth spread with Lard and sprinkled with Compound Powder of Lobelia should not be neglected.

To aid the first requirement we use the cotton or oiled silk jacket; or, where this would be inconvenient, the cotton cloth spread with Lard and sprinkled lightly with Emetic Powder.

In all cases the air of the room should be kept moist, and if the irritation of the lungs is great, with harassing cough, we may obtain much advantage from the use of inhalations. This not only gives present relief, but it aids the cure; indeed, we are not certain but that the disease could be very successfully treated by the use of inhalations alone, adding the sedative to the water employed.

As a general rule, we will find the second indications of cure accomplished by the means already named. As soon as the pulse is brought under the influence of the sedatives, there is a natural tendency to a re-establishment of secre-

tion. At the commencement of the treatment the patient may have a general bath with soap and water to cleanse the skin, and a hot foot-bath for its quieting influence upon the nervous system. Further than this, we do not think bathing is beneficial, except sponging the surface under the cover, drying speedily and with friction, which also allays nervous irritation.

The child should be kept in the recumbent position in its bed, and should be kept pleasantly warm and free from all draughts and changes of temperature. If at any time during the progress of the disease there is tendency to coldness of the extremities, apply dry heat, wrapping the feet and legs in flannel, and administer alcoholic stimulants or Strychnia internally.

If the child needs a stimulant and tonic, we think we may obtain good results from the inunction of Quinine, as heretofore named.

When the disease passes into the stage of resolution, we can do nothing more than support the strength by the use of the bitter tonics, as they can be given, and such food as we can prevail upon the child to take. In some cases advantage might result from the use of Sodium Sulphite, or the Calcium Sulphide, or Syrup Hypophosphites.

PLEURISY.

This is an inflammation of the pleural membranes, and may be primary or secondary. It is also divided pathologically into plastic or dry pleurisy, pleurisy with serous effusion, and pleurisy with purulent effusion, or empyema.

Etiology. — All forms of pleurisy are common to childhood. They are generally secondary to diseases of the lung itself, or follow the acute infectious diseases, as scarlet fever, measles, or whooping cough. It is also secondary

to acute rheumatism or a complication of Bright's disease, although it may be primary.

Pleurisy with serous effusion is not as frequent in childhood as in the adult; whilst empyema is more frequent, being a frequent complication of pneumonia.

An etiological factor in older children is exposure to cold or wet, the changeable weather of winter and spring increasing the prevalence of cases. Injuries to the chest, such as fracture of the ribs, or penetrating wounds, may set up empyema.

PATHOLOGY. — In the dry or plastic form the membrane has lost its luster and presents, instead, a dull, non-glistening surface. The part inflamed is intensely injected. The change in color is due to the exudation, which consists of fibrin, connective tissue, and pus cells. This exudation also causes the pleura to present a rough, shaggy appearance. According to the amount of pus, the exudation varies in color from a grayish to a yellowish green. After this form, there usually remains some thickening of the pleura, and, in some cases, adhesions of the opposing surfaces.

In the sero-fibrinous form, the changes at first are the same as in the plastic form, though of a severer grade, and involve the greater portion of the pleura upon one side. There is an abundant exudation of serum, and the pleura is coated with a fibrinous exudate that varies in thickness. The amount of exudate varies from a very small amount to a quantity sufficient to fill the entire pleural cavity. Unless there be adhesions, the fluid gravitates to the most dependent portion of the cavity.

In the third variety, empyema, the inflammation is of a more intense nature, the products being serum, pus, and fibrin. The pleural surfaces are greatly thickened, and present a granular suppurating surface, and both surfaces may exhibit perforations.

SYMPTOMS.—The symptoms in the first form vary considerably. The most prominent local symptom is the sharp pain, usually referred to the region of the nipple. The pain is increased by inspiration, as well as by voluntary motion. There is tenderness on pressure, and a dry, tearing cough that is restrained on account of the pain induced. The respirations are hurried, painful, and jerking in character, until the exudation has taken place.

The general symptoms are not always so pronounced. They are increased temperature and pulse. Occasionally in more severe cases there is a distinct chill, high fever, and profound prostration. Such cases are often fatal. In the sero-fibrinous form, the onset is usually insidious. When it occurs as a complication of an acute infectious or a chronic disease, the symptoms may be quite obscure, and be only revealed by a physical examination. The stitch-like pain in the side, aggravated by motion and cough, is the most distressing symptom. The range of temperature is not high, and the pulse is frequent, small, and compressible. There is cough.

After two or three days the effusion takes place, and consequent embarrassment of breathing. According to the amount of effusion, there will be dyspnoea, orthopnoea, and cyanosis. Unless the effusion be quite large, it usually disappears by absorption.

In empyema the symptoms will vary with the cause. It may begin with acute symptoms, such as rigors, high fever, and prostration. It may begin insidiously as a secondary infection, when the symptoms of a septic infection, such as irregular chills, fever and sweats, cachexia, pallor, anaemia, and prostration, soon develop. The respiration is accelerated, there is cough and dyspnoea.

Physical signs: Inspection in plastic pleurisy reveals the restriction of movement on the affected side. Percussion yields the normal note. Auscultation reveals the

pleuritic friction sound. After exudation has taken place, it is heard on both inspiration and expiration.

In pleurisy with effusion, inspection shows a restriction in the movements of respiration on the affected side, the degree depending upon the amount of effusion. The intercostal spaces are obliterated, and some bulging is visible of the lower part of the thorax. The apex beat of the heart is displaced to the left when the effusion is on the right side, and to the right in left-side pleurisy.

Palpation shows more clearly the deficient movements of the affected side and the obliterated intercostal spaces, as well as the position of the apex beat and displacement of the organs. There is nearly always an absence of vocal fremitus.

Mensuration shows the diminished expansion of the affected side, and, if the effusion is large, an actual difference in size.

Percussion: With the increase of effusion, there is defective resonance, gradually passing into flatness. This flatness changes with the change of posture of the patient, the change being dependent upon the level of the fluid, being highest when the patient is in the upright position. There is also a sense of increased resistance imparted to the fingers.

Auscultation: Early in the disease the pleuritic friction sound is heard, disappearing as the effusion takes place. Bronchial breathing and voice, if heard at all, are very feeble, and seem distant. Above the level of the fluid there is broncho-vesicular breathing, and on the unaffected side the breath sounds are exaggerated.

The course of sero-fibrinous pleurisy is decidedly variable, lasting from a few weeks to several months. After persisting for a week or ten days, the fever subsides, the cough and pain disappear, and the effusion is slowly absorbed. With the absorption, there is a decrease in the

size of the affected side and a return to the normal appearance of the chest and the respiratory movements. In some instances there may be a positive retraction, with resulting deformity. There is also a gradual return of the normal physical signs, from above downward, with the gradual subsidence of the fluid and consequent expansion of the lung. In empyema, the physical signs are practically the same as in pleurisy with an effusion. There is frequently, also, some oedema of the chest walls. If the pus be not evacuated, but allowed to open itself, there will be an inflammatory point at the seat of rupture, and possibly fluctuation.

DIAGNOSIS.—In the plastic form, there is usually no difficulty in diagnosis. It is in pleurisy with an effusion that we are apt to make our mistakes. The latter so often occurs as a secondary trouble, with the general symptoms masked, that an examination of the chest is neglected.

The distinguishing points have already been referred to. They are displacement of the organs, flatness on percussion, absence of rales, friction sounds with respiration.

Pleurisy with but a small amount of effusion is liable to be mistaken for pneumonia. The points of difference, briefly enumerated, are: difference in mode of onset; difference in physical signs; thus: In pleurisy, there is absence of fremitus or breath sounds; if heard, they are feeble and appear distant; no rales, and there is distention of the thorax. In pneumonia, there is no distention; there is vocal fremitus; the dullness is less marked; there are increased voice and breath sounds, and rales are heard in the first and third stages. No displacement of neighbouring organs occurs. In cases of doubt, the exploratory needle can be used. The diagnosis between pleurisy with a serous effusion and empyema is made by means of the exploratory needle.

PROGNOSIS.—The prognosis in the first and second forms of pleurisy is usually good. Exceptionally, deaths may occur suddenly.

In empyema, the prognosis in children is better than in adults. The features affecting the prognosis are: the cause, age of the patient, and the duration of the disease.

The application of modern surgical principles in empyema has rendered the prognosis less grave than formerly.

TREATMENT.—An inflammation of the pleura, it should be remembered, is the same as an inflammatory action elsewhere, and should be treated as such. Rest in bed is, therefore, imperative, and measures should be employed to alleviate the pain. We employ, locally, the hot salt packs. The cotton jacket, covered with oiled silk, is also a good measure.

Internally we administer Aconite, during the febrile stage, when the pulse is small and frequent, or Veratrum, when it is full and strong. Alternated with either of these, we use Bryonia for the sharp, pleuritic pain. This remedy is not only good in the first stage, but is also useful after effusion has taken place, as it hastens absorption. At times we use in combination with it Asclepias Tub., when the skin is dry and there is a difficult, dry cough.

There are cases in which Belladonna, Gelsemium, or Rhus Tox. will be called for. Belladonna, when the patient is dull and stupid; Gelsemium, when the face is flushed, eyes bright and pupils contracted; Rhus Tox., with the sharp frontal headache, and when the little patient cries out shrilly and startles in its sleep.

The first four remedies, with the hot applications, are usually sufficient in pleurisy. Occasionally it is necessary to give some anodyne to alleviate the pain; if so, we give small doses of Dover's Powder.

After effusion has taken place our object is to limit it as

much as possible and to hasten absorption. We have already mentioned Bryonia. Pilocarpus will also hasten absorption in some instances; it is indicated when there is elevated temperature, sharp, hard pulse, dry skin and scanty, high-colored urine.

Potassium Iodide will also assist absorption; we follow the usual indication in giving it; the pale, leaden color of the mucous membranes of the mouth, narrow, pointed, red tongue.

Hydragogue cathartics and diuretics are at times used to hasten the elimination of the fluid. In children care must be exercised in their use, as they may prove too harsh and induce extreme prostration.

When the exudation persists and resists attempts at removal by internal medication, aspiration will be necessary. The indications for it are: When the sac is full; when there are symptoms of involvement of the unaffected side; marked displacement of the other organs; extreme embarrassment of breathing.

The patient is placed in bed and the puncture made in the seventh interspace on the right side and in the eighth on the left, in the axillary line. The strength of the patient should be maintained by a good, nutritious diet and rest. Stimulants, Cod-Liver Oil, Arsenic and other tonics are needed, and the convalescence managed in a judicious manner.

The treatment of empyema is largely surgical. Aspiration does not give good satisfaction, neither does the trocar and canula. A free incision under antiseptic precaution and the establishment of drainage by means of a tube is far more satisfactory.

Gymnastic exercise to favor the expansion of the lung, a nutritious diet and such remedies as favor nutrition and repair waste are needed.

CHAPTER X.

DISEASES OF THE HEART.

The examination of the child's heart necessitates the employment of the same methods as in the adult. In the diagnosing of congenital affections the changes in the circulation which take place with birth must be remembered. With the tying of the umbilical cord, the circulation through the umbilical vein and arteries and ductus venosus ceases. With respiration it also ceases to pass through the ductus arteriosus, and shortly also through the foramen ovale.

The pulse in infancy is very frequent, from 105 to 110, and remains frequent until about the tenth year, decreasing until it is about 80 at that age. It is excited in childhood upon the most trivial causes. The apex beat is somewhat higher and a little farther to the left than in the adult. It may be displaced by deformities of the chest, due to rickets, Potts' disease, curvature of the spine or effusions within the pleural cavity.

In a physical examination of the heart, we employ inspection to determine whether there is any deformity or bulging in the praecordial region, and to assist in the location of the apex beat. The latter is frequently difficult in children, owing to its weakness.

Palpation enables us to locate it with considerable more exactness. Displacements indicate effusion within the pleural cavity, or hypertrophy of the heart. Percussion is best performed when the stroke is light. We thus outline the heart, noting the area of both relative and absolute dullness. The lower border is difficult of determination, as its dullness runs into that of the liver.

Auscultation should be performed with a stethoscope. Murmurs in children are difficult to differentiate. This is due to the fact that the action of the heart is so rapid that diastolic and systolic murmurs are indistinguishable. Both

normal and pathological murmurs are relatively louder in the child than in the adult, and their diffusion greater.

CONGENITAL DISEASES.

Congenital Heart Diseases include all abnormalities of the heart and circulation found at birth.

ETIOLOGY. — The causes include a great variety and combination of conditions. For convenience of description they have been divided into three varieties.

1. Persistence of structures normal to foetal life, such as open foramen ovale, open eustachian valve, or ductus arteriosus.

2. Anomalies of development, or an absence of the septum between the auricles or ventricles. Transposition of the great vessels or variations in the valves.

3. Changes due to a foetal endocarditis. These changes are usually found in the right side of the heart, affecting the pulmonic valves. They lead to an hypertrophy and dilatation. More than one of these conditions are usually present at the same time.

SYMPTOMS. — The most frequent and characteristic symptom is cyanosis. This is seldom absent. When it is, the condition is liable to be overlooked. It is not always marked, but is made more intense by any exertion or a fit of coughing. Sometimes it is intense and constant, as in a boy seven years old recently brought to the writer. This cyanosis is most frequently due to deficient oxygenation and not to an admixture of the venous and arterial blood, as formerly supposed. This condition is rarely seen in acquired heart disease. Another symptom is clubbing of the terminal phalanges of the fingers and toes. Dyspnoea on the slightest exertion is present at times, but not always. Oedema of the lower extremities and dropsy

of the serous cavities also occur, should the patient live for any length of time. Hemorrhages occasionally occur, usually taking the form of an haemoptysis or epistaxis.

DIAGNOSIS. — The diagnosis of a congenital heart disease is not difficult. The symptoms are characteristic. Cyanosis, clubbed fingers, dyspnoea and a tumultuous action of the heart are easily detected. Often a murmur is heard at the base, and there will be an hypertrophy, especially should the patient survive for any considerable period. The difficulty consists in determining the exact nature of the lesion, which in the vast majority of cases is impossible.

PROGNOSIS. — This will depend upon how the circulation is carried on, rather than upon the degree of cyanosis. Usually these conditions are incompatible with long life, though we have known a man with congenital heart disease to live until he was past forty-five and labor quite hard on a farm. Cyanosis was present all his life.

TREATMENT. — This of necessity is entirely symptomatic. We attempt to relieve as far as possible any distressing conditions that may arise. No amount or kind of treatment will avail anything in correcting the existing congenital deformity.

PERICARDITIS.

Pericarditis is an inflammation of the serous covering of the heart. The younger the subject, the more rare the disease.

ETIOLOGY. — Pericarditis is a secondary affection. In children it is most frequently associated with acute rheumatism. It may precede or follow the joint symptoms. In infancy and before the fourth year it usually results from an extension of an inflammation of the pleura or left lung.

It also follows the infectious diseases, especially scarlatina, bearing some connection to the nephritis or joint inflammation of that disease. It is also at times secondary to pyæmia, periostitis, osteitis or tuberculosis. It is very frequently associated with endocarditis.

PATHOLOGY — The changes in the pericardium due to an inflammation correspond very closely to those seen in any other serous membrane. The first change is an injection or congestion of the blood vessels, followed by an exudation. In the so-called dry pericarditis this exudation consists principally of fibrin, which glues the two opposing surfaces together. This is partially absorbed, but leaves behind adhesions of a greater or lesser extent, which are permanent. In occasional cases the sac is obliterated. In children there is more or less serous effusion, the dry form being rare. There is a gradual absorption of the effusion, but complete recovery is rare, more or less adhesions remaining. This effusion is sometimes purulent or hemorrhagic. If due to a foreign body, rupture of an abscess or pyæmia, it is purulent.

SYMPTOMS. — The subjective symptoms of a pericarditis in children are indefinite and unsatisfactory. The most prominent are dyspnœa and occasionally orthopnœa. As it is in nearly all cases secondary, we should be on our guard against it in pleurisy, pleuro-pneumonia and articular rheumatism, especially when occurring in the young.

When the case is severe, there is uneasiness, pain and tenderness in the cardiac region. Owing to an embarrassment of the heart's action, there will be palpitation, slight irregularity of the pulse, uneasiness in the praecordial region and dyspnœa. As the effusion takes place, the heart's action is more embarrassed. The dyspnœa increases, and we may have orthopnœa and cyanosis.

Before effusion has taken place in older children a double

friction sound is heard near the base, which is independent of respiration. When effusion takes place, this disappears. Bulging is occasionally visible in young children, owing to the thinness of the thoracic walls. The apex beat is displaced, diffused or absent. These conditions are frequently more distinctly discernible by palpitation than by inspection. The heart sounds are muffled and indistinct. Percussion elicits increased cardiac dullness or flatness. This area of dullness is of a triangular shape, with the base below and extending to the right of the sternum. With the absorption of the effusion the friction sounds reappear.

Acute pericarditis may be followed by the subacute or chronic forms.

The latter has no distinctive symptoms. There is a permanency and increase of the subjective symptoms outlined above. Bulging and a strong diffused beat may be seen and felt. Owing to adhesions, a retraction at the apex, followed by a rebound, is noticed with each systolic contraction. This is best determined by palpation.

DIAGNOSIS. — It will be perceived that the diagnosis of a pericarditis presents difficulties. The best method to be pursued is by elimination, differentiating it from conditions that would present similar symptoms. It must be differentiated from pleuritic effusions of the left side; hypertrophy or dilatation of the left side of the heart, and an endocarditis. In the dry forms the friction murmur, when distinguishable, is one of the best guides. As the dry form is not frequent in children, we must differentiate the effusion. With hypertrophy and dilatation, the dullness does not extend to the right of the sternum nor as high as the fifth interspace, as does an effusion in the pericardial sac; neither are the heart sounds so indistinct and muffled.

PROGNOSIS. — In early infancy the disease is serious. It will also depend upon the exciting cause. Following the

infectious diseases, pleurisy, or pneumonia, the outlook is bad. Convalescence is usually slow and the remote consequences uncertain by reason of the adhesions.

TREATMENT. — When a case of pericarditis occurs in any form, absolute rest, physical and mental, should be maintained. The patient should be placed in bed and hot applications should be made to the cardiac region. Cold is recommended by many. Personal experience has demonstrated that children do not bear the cold application as well as the hot.

Internally, the very best remedies are Aconite or Veratrum. Aconite, when there is a rapid, feeble pulse, with cardiac pain. Veratrum, when there is a strong, laboring heart, with full, bounding pulse. They should be continued until the pulse is decreased in frequency. When there is much cardiac effusion, especially when the disease is of a rheumatic origin, Bryonia is the remedy. When of rheumatic origin, other anti-rheumatic remedies will be given, according to the indications presented. These are Macrotyls, Sticta and Rhus Tox. Should the effusion become so great as to seriously embarrass the heart's action, paracentesis of the pericardium becomes necessary.

ACUTE ENDOCARDITIS.

Endocarditis is an inflammation of the membrane lining the cavities of the heart. It may be acute or chronic. The disease attacks mainly the valves of the heart. It occurs in foetal life, when it affects mainly the right side of the heart, being one of the most important elements in the production of congenital malformation. Occurring after birth, it almost always involves the left side.

ETIOLOGY. — Acute endocarditis occurs almost as frequently in children as in the adult. Whilst in infancy it is

rare, after the fifth year it is quite common. It is almost always a secondary disease, being most frequently an expression of rheumatism. At times it may be associated with chorea, without any articular symptoms. The latter nearly always appear later. It may be associated with any of the acute infectious diseases, more frequently with scarlatina. It may follow pleurisy, pneumonia, septicæmia or tonsillitis.

PATHOLOGY. — The inflammation may affect any part of the endocardium, though it usually attacks the valves, leaving upon them warty excrescences or growths. The endocardium first becomes swollen and smooth. There is an extensive growth of new connective tissue cells in the substance. From this growth result the excrescences upon the valves or surface of the membrane. Upon these growths fibrin coagulates from the blood and becomes organized. As a consequence of these growths the valves become deformed and the chordæ tendinæ shortened. Masses of this new growth may break off and be carried by the blood current into different portions of the body. These are called emboli, and the resulting condition embolism.

SYMPTOMS. — The disease usually begins insidiously. There may be no distinctive symptoms to call attention to the heart, and the disease is unsuspected, until the heart be examined and the disease recognized. This is no doubt due to the fact that the heart is not watched as closely as it should be in rheumatic affections. It may begin abruptly, as it did in a girl of ten years recently under our care, as a result of rheumatism. In her case, there was a sudden rise of temperature, restlessness, cardiac oppression, dyspncea, and a strong, labored heart action.

When the heart is examined, a blowing murmur is heard, accompanying either systole or diastole. Usually it is

systolic, best heard at the apex and transmitted to the left, being distinctly heard at the inferior angle of the scapula. By palpation, a thrill is felt with each contraction of the heart. Later in the disease the evidences of dilatation are seen.

Endocarditis is sometimes the cause of an obscure fever accompanying chorea. It may last two or three weeks, and then slowly improve. Improvement, unfortunately, is rarely complete. A murmur is usually persistent and chronic endocarditis develops. Recurrent attacks are frequent, and the changes develop a chronic valvular disease or chronic endocarditis. Sometimes, as in the case of the girl mentioned, it proves speedily fatal. There is a rapid development of dilatation with its symptoms, such as dropsy, cyanosis, orthopnoea and pulmonary oedema. At times the occurrence of an embolism in some portion of the body calls attention to the heart. If it occurs in the brain, we have hemiplegia; if in the kidneys, haematuria; if in the liver or spleen, local pain and enlargement; if in the limbs, obstructed circulation.

DIAGNOSIS. — Frequently the diagnosis is not made, simply because the heart is not examined. It is to be distinguished from pericarditis. Pericarditis has a friction sound, or when there is effusion the heart sounds are feeble and indistinct. In endocarditis there is a murmur or blowing sound, either systolic or diastolic in time, and located in accordance with the seat of the valve diseased. The valve involved, as previously said, is usually the mitral. If the affection be confined to the endocardium of the wall of the heart, the valves not being involved, the diagnosis is impossible.

PROGNOSIS. — The disease is seldom fatal. When death does occur, it is usually from some complication, as a pneumonia, or from some intercurrent attack. Recovery is

rarely complete, some damage being done to the valves, which destroy their efficiency, and a chronic endocarditis results.

TREATMENT.—The first consideration is prophylaxis. As rheumatism is, in the majority of cases, the prevailing etiological factor, it is therefore necessary that rheumatic patients be kept at rest as much as possible. Anti-rheumatic remedies must be given until recovery is complete. When an attack occurs, rest should be absolute. If rheumatism is present, the anti-rheumatics previously mentioned should be pushed to their limit. Hot applications should be made to the cardiac region. Aconite is given when the heart's action is rapid and pulse small; Veratrum, when full and bounding. If the pulse is feeble and the urine scanty, with possibly some albumen in it, Digitalis. If there is much pain and dyspnoea with an exceedingly rapid heart action, Crataegus. These remedies, especially the first two, with rest, will usually do all that is desired in acute endocarditis. After recovery, whether partial or complete, tonics and a careful attention to hygienic conditions, exercise and labor, both mental and physical, are necessary for the prevention of recurrent attacks.

CHRONIC ENDOCARDITIS.

Chronic endocarditis is a sequel of simple endocarditis. It leads to deformities of the valves. Its symptoms are those of valvular disease of the heart.

ETIOLOGY.—Rheumatism is the most important etiological factor in its production, though in many cases it is the result of recurrent attacks of acute endocarditis.

PATHOLOGY.—The segments of the valves are thickened by the production of new connective tissue formed by the inflammatory action. Contraction of this tissue results in

retraction, shortening or puckering of the leaflets, and a consequent imperfect closure of the valves. The chordæ tendinæ are sometimes shortened or disappear entirely from this contraction of tissue. Their shortening also assists in deforming the valves. The valves are also the seat of calcareous deposits. These changes in the valves cause an imperfect or insufficient closure, thereby allowing a regurgitation of the blood through the opening, which should be guarded by them. A narrowing or contraction of the opening may result. This stenosis obstructs the flow of blood through it. In early life the mitral valve is the one usually affected; the aorta rarely. The valvular lesions cause hypertrophy and dilatation to take place in the walls and cavities of the heart. Hypertrophy is an increase in the muscular structure of the heart. This is due to the increased work consequent upon an obstructive lesion. It may continue indefinitely, or degeneration of the muscular structure may take place, resulting in dilatation. This is an enlargement of the cavities of the heart at the expense of the muscular walls. This is always injurious. Dilatation of the auricles may be produced by the regurgitation of blood as a result of an insufficiency of the valves. As long as hypertrophy continues, the circulation is carried on without producing any serious symptoms. When dilatation results, we have symptoms of an embarrassed circulation and disturbances of the circulation in other organs. Disturbances of the pulmonary veins lead to congestion of the lungs; of the systemic venous circulation, to congestion of the kidneys, spleen and peritoneum, and to a general dropsy.

SYMPTOMS. — The changes in chronic valvular disease come on so slowly and the interference with the heart and circulation is so gradual, the disease is often discovered only accidentally. This accommodation of the heart muscle to the increased work placed upon it is called "com-

pensation." So long as it remains good, there will be no embarrassment of the circulation and no distressing symptoms. Whilst the immediate effect of the increased work placed upon the heart is a dilatation of the cavity, it is provided for by an hypertrophy of the muscular structure. After a while degeneration begins, or the valvular lesion grows worse, and then dilatation increases at the expense of the hypertrophy. It is then said that compensation fails, and the symptoms of an interference with the circulation begin. This may occur in a short time, but, on the other hand, it may be a process of years, or it may never take place.

This failure of compensation results generally from a sudden exertion, great mental excitement, or the stress due to some intercurrent disease. In children it may result from the advent of puberty and the increased work resulting from a rapid growth of the body.

The principal subjective symptoms of a failure of compensation are: dyspnoea on exertion, occasional praecordial pain or distress, orthopnoea, cardiac palpitation, headache, vertigo, anaemia, cough, epistaxis or haemoptysis. The obstruction of the venous system leads to dropsy, beginning in the feet. It may be a general anasarca, with dropsy of the serous cavities, enlargement and functional disturbances of the liver and spleen, chronic congestion of the kidneys, scanty urine, haematuria and albuminuria, dilatation of the superficial veins, clubbing of the terminal phalanges of the fingers, and cyanosis. In young children these symptoms are rare, but with the advent of puberty they commence. They may increase steadily until death occurs, or, as in a young woman now under observation, they may nearly disappear, to reappear upon the slightest provocation. Death may be due to cardiac paralysis, an intercurrent nephritis, pneumonia, embolism, inflammation of the serous membranes, or oedema of the lungs. The

physical signs vary with the valve or valves involved in the disease.

Mitral Regurgitation is due to insufficiency of the mitral valves, permitting the blood to leak back into the left auricle during systole. It is quite frequent. It results in an hypertrophy of both ventricles and a dilatation and hypertrophy of the left auricle. The increased pressure upon the pulmonary veins and the arteries causes a congestion of the entire pulmonary circulation and a consequent hypertrophy of the right ventricle. The right ventricle fails or dilates, the tricuspid valves become incompetent, embarrass the right auricle, and the systemic venous circulation becomes congested. With mitral regurgitation there is heard, by auscultation, at the apex a systolic murmur, which is transmitted to the left, being heard with equal distinctness at the inferior angle of the left scapula. It may be heard all over the chest. Percussion gives increased dullness over the cardiac area. The apex beat is displaced downward and to the left. With hypertrophy, the heart beat has a forcible, heavy impact. When dilatation takes place, the impulse is indistinct, diffuse and undulatory. The sounds are feeble, the action irregular, and the pulse small and weak. In both conditions the impulse is visible in the epigastrium.

Mitral Stenosis.—This is a change in the mitral valves which impedes the flow of blood from the left auricle into the left ventricle. It is the result of repeated attacks of rheumatism, or a slowly progressive endocarditis. It is almost always associated with some degree of mitral regurgitation. It causes hypertrophy of the right ventricle and left auricle. The secondary changes are dilatation of the left auricle, followed by hypertrophy and dilatation of the right ventricle, due to the obstruction of the pulmonary circulation. On auscultation a diastolic or presystolic murmur is heard at the apex, which is circumscribed or

limited in extent. On palpation a purring thrill is distinctly felt. The apex is displaced slightly to the left. Percussion reveals the cardiac area increased to the right of the sternum. The pulse is small and weak.

Aortic Regurgitation.—This permits of a reflux of blood into the left ventricle during diastole. It is a rare condition in children. It is not incompatible with a long, active life, compensation being perfectly maintained for years. The entire heart becomes hypertrophied. On auscultation there is a diastolic murmur, heard loudest at the second intercostal space, to the left of the sternum, and transmitted downward to the apex or the ensiform cartilage. It is the most diffused of all cardiac murmurs. Percussion reveals the increased size of the area of cardiac dullness. The apex is seen in the nipple line or external to it, and the chest wall may be prominent over the enlarged left ventricle. By palpation the powerful action of the heart is evident. The pulse is characteristic. It is very quick and abrupt, and collapses quickly. There is throbbing of the carotids and a capillary pulse may be distinguished. Headaches come on early; there are flashes of light and cerebral congestion. In a case under observation at present, the throbbing carotids can be seen for some distance. The impulse of the heart is visible through the clothing and diffused over nearly the entire chest.

Aortic Stenosis.—This is an obstruction to the flow of blood from the left ventricle into the aorta. This condition causes but few symptoms, compensation being so complete. On auscultation a systolic murmur is heard, loudest at the second intercostal cartilage to the right of the sternum. It is transmitted upward, and usually is heard in the carotids. Percussion may show some enlargement of the left ventricle.

Tricuspid Regurgitation.—This is an insufficiency of the right auriculo-ventricular valve. It is usually secondary

to some lesion of the left side of the heart. It may be due to pulmonary emphysema, chronic interstitial pneumonia, or pleurisy.

There is a marked epigastric impulse, and percussion shows an extensive dullness to the right of the sternum. Auscultation reveals a systolic murmur, best heard at the lower border of the sternum and limited to a small area. It causes a dilatation of the subclavian and cervical veins, and a systolic impulse of them.

DIAGNOSIS. — This has been dwelt upon at some length. It is made by the physical signs and the condition of the heart and circulation.

PROGNOSIS. — Many lesions of the heart are compatible with long life. Sudden deaths from chronic endocarditis are rare, although compensation is not so well maintained as in adults. Systemic symptoms are apt to occur about the age of puberty.

This is probably due to the fact that the muscular walls are less resistant to the increased work placed upon them. The degree of compensation and the condition of the circulation are the factors to be taken into consideration. Acute diseases, especially pertussis, diphtheria or scarlet fever, increase the danger.

TREATMENT. — These patients are necessarily under constant attention. When compensation is good, little or no medicines are necessary, but a careful regulation of exercise, and daily routine is always required. Undue muscular exertion must be forbidden. Exercise is required, but prolonged strains must be forbidden. Overtaxation in school is also injurious.

When signs of a failure of compensation are seen, rest in bed is required. If the disease is the result of rheumatism, or if articular symptoms present themselves, anti-rheumatics are required.

When dropsy occurs and the pulse is weak and open, Digitalis should be given. Strophanthus acts quite efficiently when there is a general anascara and a scanty flow of urine. Crataegus is used when there is pain, dyspnoea, oppression, rapid and feeble action, marked anaemia and venous stasis, connected with muscular weakness of the heart, indicated by weak and rapid action. Convallaria is demanded when there is disordered rhythm and violent action.

Cactus is demanded by an irregular pulse, feebleness of the heart's action, dyspnoea, and weight in the chest. It is valuable when the disease follows an exhaustive disease.

Pulsatilla is good in case of a rapid pulse, the patient having a fear of impending danger.

Apocynum is an exceedingly valuable remedy when there is general oedema of the body.

Bryonia is frequently indicated by the hard, quick pulse, short, harsh, hacking cough, and sharp, transient pains. It is one of our best remedies in inflammations of serous membranes, and hastens absorption of inflammatory exudations.

Lycopus is also frequently useful when there is marked irritability and irregularity of action, dyspnoea, oppression and cough.

With the appearances of general dropsy, hydragogue cathartics and diuretics are often necessary in order to give relief, Digitalis in an infusion; Elaterium, in one-eighth grain doses, usually combined with Potassium Bitartrate, is then needed. The Potassium Citrate, or some of the Lithia salts, is frequently indicated. Many other remedies are indicated beside those mentioned. Recently we had occasion to use Aconite in a chronic valvular disease, alternating it with Apocynum. Relief was speedy. It was no doubt an acute exacerbation. Potassium Iodide,

Gelsemium, Rhus Tox., in fact almost any remedy may be called for in the efforts to relieve these patients when compensation shows signs of failure.

CHAPTER XI.

DISEASES OF THE GENITO-URINARY ORGANS.

The urinary organs of the child do not suffer so frequently from disease as do those of the adult; yet when such diseases do occur, they are quite severe, and are treated with difficulty. The urinary secretion removes from the blood materials which are highly noxious when retained, and diseases impairing this function are always followed by marked constitutional disturbance.

In the examination of the urine in children we are always confronted with the difficulty of securing a sufficient quantity for chemical analysis. Various methods have been suggested, such as a bottle for males and a cup for females, fastened to the body. My own preference is the use of a soft rubber catheter in either sex. The quantity passed in twenty-four hours is relatively larger in infants than in older children or adults, owing to the more active metabolism. The frequency of voiding is also greater. The physical character of the urine is the same, save only in the new-born, when it is more highly colored. Later, owing to the admixture of mucus, it is paler and turbid. Some urates and uric acid are also passed in the first few days, as shown by the reddish stain upon the napkins.

ACUTE NEPHRITIS.

Acute Nephritis has been subdivided into several groups, according to its pathology. Thus, we have acute parenchymatous, or intestinal nephritis; acute Bright's disease,

glomeruli or tubal nephritis. The distinctions thus formed are not always easily differentiated clinically, and one subdivision frequently overlaps another.

ETIOLOGY. — Acute inflammation of the kidneys may be produced by cold, or may arise from other causes, but in the majority of cases it arises during the progress of eruptive fevers, especially scarlatina, and is doubtless dependent on some action of the fever poison.

It may also follow any of the infectious diseases, as diphtheria, typhoid fever, erysipelas, or acute rheumatism. Owing to the frequency with which it follows scarlatina, one form, the glomeruli, has been styled post-scarlatinal nephritis. In this instance we can oftentimes trace it to a direct exposure, as when a child is allowed to go out or get out of bed too soon. Yet in other cases it has occurred when the child has been kept quiet in bed.

PATHOLOGY. — The initial lesion is a congestion and exudation of blood plasma and leucocytes in the Malpighian tufts. There are also changes in the renal epithelium. The kidneys become enlarged, soft and oedematous. The cortex of the organ is thickened and of a uniform yellowish-white color, or mottled with red; or the entire kidney may be intensely congested. Whitish foci may be seen in the cortex, owing to the presence of pus cells.

There are also changes in the tubes, stroma and glomeruli. In the tubes the epithelium may be swollen, opaque and detached from the walls. The tubes may also contain red and white blood cells. In the glomeruli, the capsules may contain coagulated matter and red and white blood cells. The glomeruli are also changed in appearance owing to this swelling and growth of cells in and on the capillaries. In what is called the diffuse form of nephritis, in addition to the above changes, connective tissue is formed in the stroma, and there is a growth of the capsule cells of the glomeruli.

SYMPTOMS.—In primary nephritis, the array of symptoms are fever, dropsy, headache, lumbar pains, scanty urine, and often vomiting. The onset, instead of being abrupt, is usually insidious, in which case the symptoms to first attract attention are, pallor, or anaemia, dropsy, and changes in the quantity and appearances of the urine. When the disease follows scarlatina, it usually begins in the third or fourth week, during the period of desquamation. In such instances the onset is gradual, the symptoms first attracting attention being the pallor and dropsy. The latter begins in the face. The feet, legs, scrotum and serous cavities are successively involved. The dropsy may be general.

The anaemia is marked, becoming greatly so with the advance of the disease. The urine is diminished in quantity or suppressed. Its color is dark red or smoky. The specific gravity low, and albumen and casts are invariably present. The pulse is usually rapid and full. In children it frequently lacks that character of hardness or tension so noticeable in the adult. The heart's action is labored, occasionally intermittent, and there is dyspncea. When there is dropsy of the pericardium, the heart sounds are muffled. The temperature is only moderately elevated, 101° to 102° F.

When there is suppression of urine, symptoms of uræmia quickly follow. There are vomiting, great restlessness, apathy and diarrhoea. In place of these, there may be headache, dimness of vision, convulsions, stupor, coma, resulting in death. Should secretion be established, these symptoms quickly abate, and the patient recovers.

Complications of acute nephritis are: pneumonia, œdema of the lungs, pericarditis, endocarditis, meningitis, and œdema of the glottis. The duration of the disease is from one to three weeks. Death usually results from uræmia, or from complications.

DIAGNOSIS.—The important points of diagnosis are: anaemia, dropsy, scantiness of urine, and the presence of albumen and casts in it. Some of these symptoms may be absent, but the presence of any two, especially when associated with the history of a preceding infectious or eruptive disease, should call for an examination of the urine and the detection of the last and conclusive symptom.

PROGNOSIS.—The prognosis depends upon the severity of the case. Should the dropsy be persistent, the pallor increase and the urine remain scanty, with a large amount of albumen, the outlook is unfavorable. Symptoms of uræmic poisoning also render it unfavorable, as do complications. Favorable symptoms are: gradual diminution of the dropsy, increased flow of urine, and an improvement of the general condition.

TREATMENT.—The prophylaxis of acute nephritis in children is as essential as is its successful treatment. Much can be done in this direction by a careful attention to what is seemingly a few minor details. Foremost among these measures is rest in bed. All children suffering with the acute infectious diseases should be kept quiet in bed. In scarlatina and diphtheria is this precaution essential. Quiet should be enforced in the former for at least one week after the temperature is normal, and it would be better were it enforced until desquamation is complete. In addition to rest, we enjoin the warm sponge bath daily, during the entire period of eruption and desquamation. The bowels should be kept open by the use of saline cathartics, and the patient given a milk diet. Water should be given freely. We have witnessed serious results follow a neglect of the first precaution, which is rest. Its imperative necessity can not be made too urgent, no matter how mild the case may be.

In the first stage of the disease the child is put upon the

use of Veratrum and Gelsemium in full doses, the object being to arrest the fever and inflammation at once. We think there are no remedies that will take the place of these; at least there are none that we would like to trust.

In place of the Veratrum we may use Aconite when the pulse is small, hard and sharp.

In place of Gelsemium we sometimes employ Macrotyls, as there is muscular pain or soreness; or Cannabis Indica, when there is irritation of the urinary passages, even to the meatus urinarius, or bloody urine. Bryonia is sometimes a good remedy if there is marked contraction of the abdominal muscles; Belladonna, if there is fullness of the abdomen with stupor and disposition to sleep, or if there has been retrocession of an eruption. Eryngium is a good remedy when there are pains in the bladder and a constant desire to pass urine; Apocynum, when the eyelids are swollen and the feet oedematous, or at the slightest evidence of dropsy.

Asclepias we find of great use when the pulse is full and soft, there is scanty perspiration, pleuritic pains and evidences of pulmonary oedema.

Hydrangea is another remedy we have found of great value in acute nephritis. Its indications are, frequent urination, with heat, burning, accompanied with quick, sharp, acute pains in the urethra; partial suppression, with aching and pain in the back. We usually use it in combination with some of the above mentioned remedies.

The object being to keep the kidneys active, as well as the skin, local applications are employed. Of these we like the influence of the hot hop fomentation better than anything else. We order the application across the loins, the child lying upon the abdomen, but when tired of this position it may be placed upon its back, and the fomentation applied over the lower part of the abdomen, and dry hops can be still applied to the back.

The child should always be kept in bed, between blankets, and the action of the skin may be solicited by the use of hot bricks, wrapped in wet cloths, near the feet.

This treatment is persisted in until the febrile action is partially checked, and secretion of urine is increased, the patient meanwhile being allowed as much fluid as is desired, unless it causes nausea.

In the second stage of the disease the patient is suffering from uræmic poisoning, and the treatment will be wholly different. We give at once a brisk cathartic, as of Jalap and Potassium Bitartrate. If the case is one of emergency, such as uræmic convulsions and complete suppression of urine, prompt action is necessary. Pilocarpine may be used hypodermatically, or the Jaborandi given internally, in order to produce a prompt action of the skin. Should there be an enfeebled action of the heart, the latter must be used with caution. We have frequently paved the way for its use by the administration of Strychnia. A hydragogue cathartic, such as Elaterium with the Potassium Bitartrate, can also be used.

Dry cups are applied to the neck and over the loins, and a hot stimulant application over the kidneys follows their use. The hot pack, or the vapor bath, may be used profitably, if it is possible, when prompt action is necessary. Stimulants and heat are also applied to the extremities.

Among other remedies we have used the Strophanthus, when there was a feeble and rapid heart action and ascites. In some of these cases with enfeebled heart action and extreme muscular weakness, alcoholic stimulants are required. Should blood appear in the urine at the same time with the symptoms of congestion, such as dullness or stupor, Ergot is called for.

In the use of diuretics we will have to be careful as the patient convalesces, for the kidneys are in a very irritable condition, and a slight irritant is sufficient to arrest the flow

of urine. It is fortunate that the Tincture of Muriate of Iron, in quite small doses, is a good tonic to the kidneys, as it is the restorative we most frequently employ for the marked anaemia almost invariably found.

CHRONIC NEPHRITIS.

Chronic Nephritis, or Chronic Bright's Disease, is never met with during the first year, is very rare during the second, but is occasionally met with from this up to the sixth year. After this time it is hardly ever seen until the person has reached middle life. It is a very insidious disease, coming on slowly, and presents so few prominent symptoms that in many cases it is not detected.

Two pathological varieties have been described by authors. First, Chronic Exudative Nephritis, or chronic parenchymatous nephritis, the waxy or the large white kidney. Second, Chronic Non-Exudative or Interstitial Nephritis, or the granular or contracted kidney.

Etiology.—Chronic Nephritis in childhood is usually a sequel to the acute form, or scarlatinal nephritis. The first form, or the parenchymatous, may also be the result of prolonged suppuration in chronic bone or joint disease, in which case it would be chronic from the beginning. Other causes given for its appearance in childhood are, hereditary syphilis, alcoholism, chronic tuberculosis and valvular diseases of the heart. In these latter conditions it is usually associated with amyloid degeneration of the liver and other organs.

Pathology.—The changes found in the kidneys do not differ from those found in later life. There are several types of kidneys which have been described in this disease. Some writers claim, however, that the variations seen depend upon the cause and duration of the disease. The

large white kidney is pale or yellowish in color, and slightly nodular. Microscopically, the renal epithelium is seen to be swollen, fatty, granular, and degenerated. The glomeruli are enlarged, owing to the growth of the capsule cells and those covering the capillaries; and in some cases, owing to the formation of connective tissue, there is compression and atrophy.

There is also described what is called the small white kidney, which is said to be secondary to the above. In this instance, the growth of connective tissue is greater, and the consequent compression and atrophy are more marked.

In chronic non-exudative nephritis there is an actual contraction of the organ. The kidneys are usually imbedded in a thick mass of adipose tissue, and the capsule is thick, opaque, and adherent. The surface of the kidney is red and nodular. The changes found microscopically are, an increased production of connective tissue and a proportionate degeneration and atrophy of the renal parenchyma. The glomeruli are small and fibrous. The tubules are atrophied, and in some cases their lumen obliterated.

SYMPOTMS.—Chronic exudative nephritis sometimes follows immediately after an acute attack, though usually it comes on so gradually that its presence is not suspected.

The child loses flesh and strength in a marked degree; its appetite is impaired, digestion feeble, the bowels irregular and the skin dry and harsh. Irritability and restlessness are marked features, sometimes to the extent that the child becomes a burden to itself and to all around it.

The three prominent and persistent symptoms, however, are, albuminuria, anaemia, and dropsy. Albumen is nearly always present to a decided degree, as well as are hyaline, granular, epithelial, and fatty casts. The urine is dark-colored and scanty, and the specific gravity increased. If the normal amount were passed, the specific gravity would be low.

The anaemia is marked, and with the gradual progress of the disease it increases. The face assumes a blanched appearance, and there is some puffiness of the eyelids, with a progressive impairment of health and strength.

The dropsy is variable and fluctuates from time to time. Beginning with an oedema of the eyelids and ankles, there is a gradual extension upward, until it assumes the character of a general anasarca. There may be dropsy of the serous sacs, with its distressing symptoms. Early in the disease there will be disturbances of the digestive organs, such as anorexia, occasional vomiting and diarrhoea. The nervous symptoms are, headache, sleeplessness, neuralgia, fatigue, dyspnoea, and epistaxis. Prior to a fatal termination, there may be convulsions, coma, and stupor, the latter symptoms indicating uræmic poisoning.

The progress of the disease is irregular. Complications, such as pneumonia, pleurisy, pericarditis, and endocarditis, are frequent, and prove fatal. The second type of chronic nephritis is rare in early life. Its symptoms are masked for a considerable time, often for years, and the progress of the disease is slow. Often it is not suspected until some grave complication occurs, which causes marked renal symptoms, and which may be recovered from, and followed by a season of gastric disturbances of variable length. Headache, fatigue, impaired vision, frequent micturition, and impaired general health, follow.

The urine is usually excessive in amount. The calls to urinate are frequent, often two or three times at night. The urine is of a pale color and of a low specific gravity. The amount of albumen is small, and may disappear for a season. Dropsy is not constant, as in the previous type; in fact, it is rare.

Heart complications are common. There is usually an hypertrophy of the left ventricle. The pulse is hard and incompressible, and of increased tension. As a result of

the heart complication, there is breathlessness on the slightest exertion; a stasis of blood, which results in pulmonary oedema and oedema of the extremities. Hemorrhages are common; epistaxis proving a serious complication. Nervous symptoms are prominent, such as neuralgic pains, insomnia, and muscular twitchings. Later there is drowsiness, stupor, and uræmic coma.

DIAGNOSIS. — The diagnosis is principally made by exclusion. We overlook the disease by a neglect to examine the urine in children. In cases of malnutrition and steady decline of general health of obscure origin, a systematic examination of the urine should be made. We should not be positive on one examination, but several should be made, the urine being secured at different periods of the day.

PROGNOSIS. — The chances of a complete recovery are poor. Cases may be prolonged over a long period of time, but sooner or later the symptoms invariably return. The unfavorable symptoms are: involvement of the heart, a large amount of dropsy, pulmonary oedema, the persistence of a large percentage of albumen in the urine, and renal insufficiency.

TREATMENT. — The treatment of chronic nephritis is much the same as in the acute form. The patient is to be treated, and not the disease, chronic nephritis. In other words, he is to be treated symptomatically. The treatment should be hygienic, dietetic, and medicinal.

The child may have a hot salt-water bath every day, being rubbed with dry flannels afterward and clothed in warm woolen garments. Or, in place of this, we may use fatty inunction, rubbing the surface thoroughly. Inunction with Quinine answers an excellent purpose in some cases, especially those in which there is a malarial influence.

The diet should be as nourishing as possible, but bland

and, to a large extent, liquid. Gastric disturbances require attention as a necessary assistance to nutrition, and such remedies as Ipecac, Nux or Xanthoxylum, the Compound Syrup of the Hypophosphites, some of the preparations of Malt, Iron, Collinsonia, Hydrangea, or Eryngium, will be called for, both to quiet irritation and as a restorative tonic.

The nervous system and urinary organs call for small doses of Aconite, when the pulse is small and frequent and there is pericarditis; Gelsemium, when there is irritation and restlessness; Rhus, when there are sharp pains in the head and enlarged papillæ; Bryonia, with pleurisy pains; Apocynum, when there is oedema; Eryngium, when there is constant desire to urinate, with pains in bladder; Cannabis Indica, when there is irritation, with bloody urine; or Agrimony, when there is pain like colic in the lumbar region. If the child is nervous and cries at every little thing, small doses of Pulsatilla may be alternated with the other remedies.

Uræmic symptoms call for prompt measures, as indicated in the preceding article on acute nephritis.

Heart complications call for Strophanthus and Digitalis, the latter being preferred in the form of an infusion, when the stomach will tolerate it. If there be an excess of urates, the lithiated salts, the Citrate or Benzoate, taken with plenty of water, will do much in flushing the kidneys.

The dropsy calls for Apocynum, as indicated above, saline diuretics and cathartics, and, if producing urgent symptoms, possibly Elaterium, with the Potassium Bitartrate.

The best local application for the child is the Vinegar pack, applied upon going to bed. A flannel cloth, six inches wide, is wrung out of tepid Vinegar, and applied around the body at the loins, and this is again covered by a dry strip. It is removed on getting up, and the part thoroughly rubbed with flannel.

DIABETES.

Diabetes is met with in two forms, both of which may occur in children. The first—diabetes insipidus, or polyuria—is a marked increase in the quantity of urine, without any change in its elements. Diabetes mellitus is a malady characterized by the nearly permanent presence of sugar in the urine, a glycosuria. The latter, although not always classed as a disease of the kidneys, will be, for convenience, described in connection with diabetes insipidus.

DIABETES INSIPIDUS.

Diabetes insipidus, or polyuria, is a chronic disease, and is characterized by the passage of a large amount of pale urine of a low specific gravity. It is rare in children.

ETIOLOGY.—The causes giving rise to this increased flow of urine are very obscure. In some cases the exciting cause seems to be cold, but more frequently it will be found to be dependent upon, or at least associated with, some disease of the nervous centers. Traumatism, as falls or blows upon the head, is said to be responsible for some cases. Chronic lesions of the brain, such as tumors or tubercular lesions, occupy a place as etiological factors. Finally, it is claimed to be in some instances a neurosis.

PATHOLOGY.—In all of these cases there is an impairment of circulation, with tendency to congestion. The nervous system suffers first, and the enfeebled innervation is one cause of the lesion of the kidneys. The condition of the kidneys seems to be one of atony rather than excitation—one which permits the water of the blood to filter off, rather than an increased activity of secretion.

SYMPTOMS.—The distinctive symptoms of polyuria are the passage of an enormous quantity of pale urine of low specific gravity, associated with polydipsia. The disease

usually comes on insidiously. Occasionally it appears suddenly, as the result of traumatism.

The amount of urine voided bears a certain relation to the quantity of liquids ingested. Restriction of the latter diminishes the former. The cutaneous perspiration is usually greatly diminished, and the thirst is intense. The nervous system suffers, and the child suffers intensely from nervous excitement. In some cases it seems almost impossible for it to obtain sleep. The loss of sleep is often caused from the frequent micturition. Palpitation of the heart, flushings of the face, headache, and neuralgia are some of the nervous phenomena. Incontinence of urine is frequent. The general health may not be much impaired. The child has a pretty good appetite, and digestion is well performed, and there is no particular suffering.

In the severer cases the marasmus is as great as in the diabetes mellitus of the adult. In such cases the irritation of the nervous system is extreme.

The course of the disease is indefinite.

DIAGNOSIS. — The diagnosis is usually easy. The large amount of water passed, with the presence of no abnormal principles, is significant. It may be mistaken for certain forms of Bright's disease. In the latter uræmic symptoms, or the presence of hypertrophy of the heart, establish the diagnosis.

PROGNOSIS. — The prognosis is favorable in the majority of cases, as the disease yields readily to remedies. When it has continued for a considerable time, the child being wasted almost to a skeleton, the nervous system being very irritable, the prognosis is unfavorable.

TREATMENT. — The treatment of diabetes insipidus is simple and direct, especially in the milder cases. The amount of fluids is restricted as much as possible, and the diet given is simple and plain.

The medicinal measures are few but certain. The principal remedy in this affection is Rhus Aromat. (Fragrant Sumach). The excessive flow of urine, of low specific gravity, is the indication.

Belladonna and Ergot have been used for some time, and with some success. We follow the usual indications in selecting them.

As the disease is brought under the control of remedies, we may alternate them with the Collinsonia, Specific Phosphorus, and the Tincture of Muriate of Iron, as a restorative. But if the patient gets along well, we will, in the majority of cases, find no cause for change.

DIABETES MELLITUS.

Although a rare disease in young children, a number of cases are recorded, and we have met it in a boy eight years of age. This disease is characterized by the presence of sugar, permanently or nearly so, in the urine; a glycosuria.

ETIOLOGY. — The predisposition to diabetes is said to be hereditary, as several members of the same family are known to be afflicted with it. It is claimed that families tainted with gout, obesity, the uric-acid diathesis, and nervous diseases, such as insanity, show a predisposition to diabetes. Injuries to the brain are said to be responsible for many cases.

PATHOLOGY. — The causes of diabetes are said to be many, yet the pathological changes are indefinite and speculative. In fact, no characteristic changes have been found.

SYMPTOMS. — The onset is gradual, and very often cases are unsuspected until some other symptom attracts our attention to the urine. In one case under our care our attention was attracted by a severe and obstinate case of

balanitis. The characteristic symptoms are: thirst, polyuria, and wasting.

The thirst is intense, and an enormous quantity of water is ingested by these patients daily. The urine is pale in color, has a sweetish odor, and the specific gravity is increased. In a case now under observation it ranges from 1022 to 1035. The quantity voided is large, and occasionally some albumen is found. Incontinence is frequent. Wasting is very rapid, and in some cases anaemia is present. The appetite may be poor or voracious. In the boy previously alluded to hunger was a marked feature. Constipation has been present in all cases under our observation. The mouth and skin are dry. The breath has a sweetish odor, and exceptionally sugar has been found in the saliva. The sleep is irregular; often broken by reason of the polyuria. Complications are frequent. Among them are: furuncles, abscesses, epistaxis, genital irritation, and cataract. The patients frequently die in a coma, styled diabetic coma. In children the disease is much more rapid and fatal than in adults.

DIAGNOSIS. — A well-defined case of diabetes can rarely be overlooked by a careful physician. In children it can be, and would be, unless it were well marked, by reason of the neglect to examine the urine. The prominent symptoms, as was previously indicated, are: thirst, polyuria, wasting. Add to these the presence of sugar in the urine, rendering the diagnosis positive. In children, an intractable incontinence of urine, with wasting, is a suspicious combination.

PROGNOSIS. — In children, the prognosis is unfavorable. The disease pursues a much more rapid and fatal course than in adults. Much can be done for these patients, however, if the parents or nurse are intelligent and follow the instructions relative to diet and hygiene.

TREATMENT.—The treatment of diabetes mellitus is chiefly dietetic and hygienic, medicines playing but a secondary part. The diet should be so restricted as to allow the patient as little starch or sugar as possible. Fresh meat and vegetables, except those which contain a large amount of starch, are allowed. Milk should be allowed in abundance. Diet is the most essential part of the treatment, and requires careful study in every case. It should not, however, be so rigorous as to be insufficient to sustain the strength of the patient and to overcome the constant drain.

Hygienic methods consist in providing abundant fresh air, exercise and suitable clothing. In patients unable to take exercise, owing to becoming easily fatigued, Massage, systematically used, provides in some degree for the loss.

As in other incurable and doubtful diseases, many remedies are advised for diabetes. In this disease, as in others, the patient must be treated, not the disease. The remedies we have found most serviceable are: Rhus Aromat., Ergot, Belladonna, Hydrangea, and Nux, Fowler's Solution, Iron, and the Lithii Salts.

Rhus Aromat. is as serviceable in this form of diabetes as in the former. The indications calling for it are the same—the passage of a large quantity of pale, colorless urine, and incontinence.

Ergot and Belladonna are said to check the flow of urine. Our preference is the Rhus.

Hydrangea is indicated by the deep-seated pain frequently complained of by these patients; also the irritation of the bladder and urethra.

Nux is given as a tonic and stomachic to the digestive organs. It is indicated by the pale, sallow expression about the mouth, frequent colicky pains in the abdomen, and muscular debility. Strychnia will answer better than Nux in some cases, especially where a stimulant is needed

as well as a stomachic. Arsenic, in the form of Fowler's Solution, is also used as a tonic. The soft and feeble pulse, relaxed skin, and rapid wasting call for its use.

Iron is called for by the anaemia, impaired nutrition, feeble digestion, relaxed skin, and red mucous membranes.

The Lithii Salts, usually the Citrate or Carbonate, are of great service where there are gouty or rheumatic antecedents. We value the former highly, and have now a case of diabetes doing remarkably well on Rhus Aromat., alternated with Hydrangea and Lithium Citrate in combination. A proper diet is strictly enjoined. Complications, such as abscesses, epistaxis, etc., must be met as they arise.

ANURIA.

This term is applied to an arrest of the urinary secretion. Where it occurs in the course of some renal disease, it is termed "suppression." Both conditions are to be distinguished from retention and from the scanty secretion often attending febrile diseases. In new-born babes, anuria is sometimes seen, dependent upon malformations. It also occurs, lasting at times from twelve to thirty-six hours, when the child appears perfectly normal, and no cause can be assigned. Anuria is to be distinguished from retention by palpation and catheterization of the bladder.

RETENTION OF URINE.—Retention of urine is most frequently due to paralysis of the bladder, though it may be produced by irritation of and contraction of the neck of the bladder or urethra, or, in some rare cases, it is dependent upon the presence of calculus.

Retention from exhaustion of the muscular coat is of common occurrence in low forms of disease, and is sometimes a source of much trouble. Retention from irritation of the urethra is attended with much pain and a frequent desire to pass water.

In retention of urine occurring during the progress of low forms of fever and inflammation, it will be noticed that the prostration is much greater, and the symptoms more grave, than would have been anticipated in the ordinary progress of the disease. Frequently the attention is drawn to the difficulty by the marked uneasiness of the child, and the movement of the hands to the region of the bladder.

In retention from contraction of the neck of the bladder or urethra, there is the evident desire to pass urine, attended with straining and pain, but the want of power to overcome the obstruction.

TREATMENT.—The treatment of anuria, when not due to malformations, is simple, and consists in the administration of Sweet Spirits of Nitre and the use of hot fomentations across the loins. They should be assiduously employed and continued until the desired result is produced.

In the treatment of retention of urine in children, we prefer the use of Santonine to any other remedy. We have used it in doses of from one-fourth to one grain, triturated with sugar, repeated every two hours. This may be assisted by hot fomentations applied over the bladder and genitals, or in some cases by a hot sitz bath.

The use of diuretics is contra-indicated in this case, as they diminish rather than increase the power of the bladder to evacuate urine, while they certainly increase the distention.

When the retention is dependent upon stricture of the urethra, or contraction from irritation, we will obtain the best results from Gelsemium.

ENURESIS.

Incontinence of urine, or bed-wetting, is most commonly a disease of childhood, though we occasionally meet with it in the adult, usually as the result of injury, or from dis-

ease. In the child it varies from the slight form of nocturnal incontinence to the severer cases in which the patient is wholly unable to retain the urine and it flows away all the time.

ETIOLOGY.—Incontinence of urine may arise from a variety of causes. It may be due to malformation of the genital tracts, to incomplete development of the sphincter muscles, or to diseases of the nervous system, both organic and functional. In some of the organic diseases it is associated with an incontinence of the faeces as well. Local conditions, such as an overdistention of the bladder with urine, hyperacidity, vesical calculi, and cystitis may all cause an incontinence. Irritation from neighboring organs, such as an adherent prepuce, balanitis, phimosis, a narrow meatus; rectal irritation, as from pin-worms, polypus, or fissures; vaginal irritation, from vulvovaginitis, adherent clitoris, or both—all these are some of the many causes which produce incontinence. In many cases it may be a combination of several of these. In some of the milder cases it seems to be a habit more than a disease, and in many cases heredity seems to play a role.

SYMPTOMS.—The simplest form of the disease is that in which the child *wets* the bed. Frequently, in these cases, the child drinks freely in the evening, and the bladder being distended at night, the urine is passed unconsciously, or under the influence of a dream. This may continue to the age of puberty, or even longer.

In other cases there is not only the nocturnal incontinence, but there is a frequent desire to evacuate the bladder through the day, and if not promptly attended to, involuntary passage of urine occurs.

Then there is the severe form of the disease, in which the person has no command over the passage of urine, but it dribbles away continually, keeping the clothes soiled,

and making it quite impossible to keep the child free from a disgusting urinous odor, irritating the surface about the parts, and requiring much care to prevent cutaneous irritation.

PROGNOSIS.—When the cause can be discovered and removed, the prognosis is favorable. The age of the patient and the duration of the disease have some bearing upon the prognosis. When the trouble is due to some organic lesion or malformation, the case is hopeless, unless amenable to surgical procedures.

TREATMENT.—In treating enuresis we should, if possible, remove the cause. Phimosis, adherent prepuce or clitoris, or rectal irritations, should first be removed by appropriate means before treating the incontinence. Anæmia, constipation, and indigestion should also receive appropriate treatment.

In the simpler forms of nocturnal incontinence, it is frequently sufficient to prevent the child from drinking in the evening, to see that it passes urine before going to bed, and have it waked once in the night for the same purpose. We want to break up the habit of involuntary passage, and this may be done in this way in the majority of cases.

In this and other forms of the disease, when there is no special lesion, we rely upon the Belladonna as a *specific*. In severe cases, those depending upon atony of the spinal cord, or consequent want of contraction of the sphincter fibers, the Belladonna is our best remedy, and will give relief when the person has been supposed incurable. Ergot has a very similar influence, and may sometimes be alternated with it.

The Rhus Aromatica has been highly recommended in these cases, and has given us great satisfaction. In feeble children the Syrup of Iodide of Iron has been given with advantage in doses of five or ten drops three times a day.

Irritability of the bladder, usually associated with impaired health, should be treated by the use of Agrimonie, Hydrangea, or Collinsonia, combined with a tonic and restorative treatment.

In those rare cases in which the incontinence is epileptic in its character, we would advise the Ammonium Bromide, alternated with Belladonna.

In cases of debility of the neck of the bladder, Strychnine or Nux will assist. Associated with this, the Faradic current may be used. When the urine is high-colored and irritating, the Lithium Citrate, given with plenty of water, renders the urine mild and alkaline, and thus assists in arresting the incontinence.

RENAL CALCULI.

There is an intimate association between renal calculi and vesical calculi. The uric acid deposits with a certain amount of cementing matter, become the nidus for the formation of the latter. Renal calculi form at both extremes of life, and are quite frequent in children before the age of fifteen. The uric acid is the most common, and the oxalate of lime next. The formation depends upon the gluing together of particles of salts in the urine, by colloid material from blood-clots or mucus. They vary considerably in size. The stone may be lodged in healthy renal tissue, giving rise to bleeding, congestion, and inflammation; or it may cause the formation of an abscess.

Gravel may be carried away by the current of the urine without causing any symptoms. A small stone may pass into the ureter, causing symptoms of renal colic. It may remain in the pelvis of the kidney, producing by its irritation pyelitis, or, by stopping the ureteral orifice, hydro-nephrosis; or, becoming lodged in the pelvis, it may cause an inflammation and suppuration.

SYMPTOMS.—If the stone be small, or it be gravel, no symptoms may be caused. In other cases the symptoms are the same as those in the adult. Pain and hemorrhage are the most important symptoms. The pain is usually felt in the loin over the affected organ. It is a dull, heavy, dragging pain, radiating to the bladder, perineum, or to the other kidney. There may also be tenderness on pressure over the affected kidney.

When the stone is larger, renal colic is caused. The symptoms are then the same as in the adult. The attack is sudden and the suffering acute. The pain shoots down the ureter into the testicle and thigh. There is nausea and efforts at vomiting, attended with faintness, cold-sweating, and even symptoms of collapse. The pain ceases, at times, almost as suddenly as it commenced, as soon as the stone reaches the bladder. Irritation of the bladder and retraction of the testicle are also symptoms produced by renal calculi. Pus in the urine, with fever and pain on pressure in the loins, would suggest suppuration.

TREATMENT.—During an attack of renal colic the patient should be given a hot bath and hot drinks, and hot fomentations should be applied to the loins. Morphine or Chloroform may have to be administered to subdue pain. In the interval between pains remedies should be administered to counteract the conditions which lead to their formation. Alkaline waters should be freely administered. Lithium Carbonate, well diluted with water, given three or four times daily, is a remedy of great value.

Piperazine is said to be a solvent for uric acid calculi. It is given when there is constant backache, dry skin, and scanty urine, or when there is a brick-dust deposit in the urine. The dose is from three to five grains, well diluted with water, three times daily.

Polytrichium is also a good remedy, either in uric or

phosphatic acid gravel, when associated with irritation of the bladder. The specific medicine may be used, though it is probably more active when used in the form of an infusion.

Eupatorium is also a good remedy in the uric acid diathesis, when irritation of the bladder is the most characteristic symptom.

Erigeron can be used when there is painful micturition, with blood in the urine.

Hydrangea has long had a well-deserved reputation in gravel. It is indicated by irritation of the bladder and urethra. It can be profitably combined with the Lithii Salts.

The treatment of pyelitis, hydronephrosis, and pyonephrosis is surgical, and the reader is referred to works on surgery for the technique of the various operations.

VESICAL CALCULI.

The nucleus of a stone in the bladder is a renal calculus which has passed through the ureter to the bladder. Around this nucleus additions continue to be deposited, until a stone of some size is formed. Whilst stone in the bladder is rare in infancy, it is not infrequent in children from two to ten years of age. The most common form in children is the uric-acid formation. The causes given for stone in the bladder are: inappropriate food for the age and condition of the individual. They are more common in males than in females.

SYMPOTMS.—The classical symptoms of stone in the bladder are: frequent urination, pain, and changes in the character of the urine.

The local symptoms are sometimes very marked; in other cases the patient will have to be observed for some time before we have such evidence as will lead us to make the necessary examination.

There is some difficulty in passing water, but it is not constant, as at one time the urine may be evacuated without any trouble; at another time the urine will be stopped in its passage, with more or less pain and tenesmus. Occasionally at such times the urine will be stained with blood.

The tenesmus and straining to evacuate the bladder may lead to prolapse of the rectum.

The urine may contain some traces of the material of which the stone is formed. In cases of long standing in children, incontinence occurs and a cystitis is developed.

As the case advances the difficulty in passing urine becomes more frequent. The patient suffers from sense of weight and pain in the bladder and loins.

Progressing in this way, the child becomes exhausted from the long continuance of suffering, and the functional derangements that follow it, and will succumb to this, or to some local disease of the pelvic viscera induced by the calculus.

DIAGNOSIS. — The uneasy sensations in the bladder, with difficulty in passing urine, point to the bladder as the seat of disease, while the long duration of the trouble, and its intractability, would lead us to suspect the presence of a calculus. To determine this, a sound is introduced into the bladder, and careful manipulation will detect the presence of the stone.

PROGNOSIS. — The prognosis may be regarded as favorable when a timely operation is performed.

TREATMENT. — The treatment of stone in the bladder is essentially surgical. The method and manner of operation, whether by crushing (lithotripsy) or cutting (lithotomy), by either the perineal or suprapubic method, belongs to the domain of surgery. A discussion of the merits of the several operations is out of place in a work of this character.

CHAPTER XII.

MALFORMATIONS—DISEASES OF THE GENITALS.

IMPERFORATE URETHRA.

Rarely a case of imperforate urethra will be met with in the new-born child. The malformation will be brought to the physician's notice by the child not passing urine, and suffering pain in consequence. An examination will determine the character of the lesion. Entire absence is rare. The occlusion is usually due to a thin membrane, which can be easily broken, or it is simply an atresia or narrowing of the meatus.

In other cases the urethra terminates by false openings in the upper or under surface of the penis — *hypospadias* and *epispadias*. These are rarely more than one inch from the meatus, frequently not more than half an inch.

TREATMENT.—In imperforate urethra the difficulty may be remedied by passing a large exploring needle, or small trocar, through the meatus and carrying it upward until it reaches the free portion of the canal. A silver catheter being now introduced, it is worn until the part heals.

In *hypospadias* and *epispadias*, though there is no danger to life, we think that the malformation should be remedied in infancy, as it can be best done at this time and with the least danger. Open up the canal of the urethra in the manner above named, and, passing a catheter, retain it for the urine to pass through. Then freshen the edges of the artificial opening, and draw them together with a silver suture. If, as in some cases, the canal really terminates with the false opening, we would operate by detaching the skin at that part, if not too far up. Bring it down to the glans and attach it with silver ligatures, retaining a catheter until the part had healed. Whilst an attempt

should be made, operations for the relief of these conditions have not been very successful.

PHYMOSIS.

The natural condition of the penis in the child is, with the elongated and contracted foreskin entirely covering the glans. Occasionally this condition is a source of trouble. We have two conditions. First, simply an adherent prepuce, in which it should be forcibly retracted, so as to expose the glans and remove the smegma, and for cleanliness. Second, in which there is a narrowing of the prepuce, so that it can not be retracted over the glans. Associated with this condition there is often a redundant or elongated prepuce.

The degree of phimosis varies greatly. In rare cases there may be no opening; or, as in a recent case, the opening was so small that the outflow of urine was seriously obstructed. In such cases cleanliness is impossible, and as a consequence there is infection and balanitis.

In case the prepuce is quite long and much contracted, it becomes irritated and inflamed by the urine, so as to be a source of very great annoyance.

Many troubles have been traced to phimosis. It is claimed that it has led to urethritis, and even to cystitis; that the consequent straining to void urine has induced hernia, prolapsus ani, and even a hydrocele by pressure. Much more important than these local conditions are the reflex troubles that have been attributed to an adherent or redundant prepuce. Among some of these conditions that are said to arise from the resulting irritation are: priapism, which ultimately leads to masturbation; insomnia, night terrors, frequent or painful micturition, and incontinence. The symptoms sometimes simulate those of stone in the bladder. A long list of nervous phenomena are said

to arise reflexly from this condition. Among them may be noted chorea, epilepsy, convulsions and paraplegia.

TREATMENT.—Manipulation will frequently enable one to retract the adherent prepuce, break up adhesions, and thus secures cleanliness. After this has been accomplished, the mother or nurse should attend to the manipulations and cleansing two or three times a week. This is frequently all that is necessary.

When there is a redundant prepuce, with phimosis, circumcision should be performed. It is very readily performed in the child, and, with care and cleanliness, is not attended with any danger. The method I would recommend is to draw down the prepuce with the fingers, and have an assistant grasp it next the glans with a pair of dressing forceps, or the arms of a pair of scissors, then cut between the fingers and it. Retract the foreskin, stitch the mucous membrane and skin with catgut ligature, and apply a water dressing until the part heals.

In some cases, simple incision of the prepuce on a grooved director, its entire length, retracting it over the glans, stitching the mucous membrane and skin, and applying a dressing as in the previous case, will be all that is required.

PARAPHYMOSIS.

Paraphymosis is the retraction of a tight prepuce above the glans penis. It is occasionally met with in boys of from six to ten years who have, out of curiosity, or prompted by those older, pushed the foreskin back and have not been able to return it. The glans becomes swollen and painful, and, if the constriction continues long, it may go on to inflammation, and finally to sloughing.

In many cases the application of cold water or ice for a short time will reduce the swelling and permit the foreskin to be drawn down. It is also claimed that if a couple of

hairpins are used, pressing the bent end up under the prepuce on each side of the glans, the prepuce can be drawn down over them.

A simple method by which we have nearly always been successful is to grasp the prepuce tightly between the first and second fingers of each hand, pressing the thumbs upon the glans, and at the same time using the fingers as tractors. It is somewhat painful, but is nearly always successful. If this does not succeed, we can incise the prepuce and thus free it. This is easily accomplished by passing a grooved director under the foreskin on the dorsum of the penis, and cutting outward with a sharp-pointed bistoury.

EXTROPHY OF THE BLADDER.

This deformity is occasionally met with, and in all degrees, as a congenital condition. It is compatible with long life, but renders the patient a burden to himself and those about him. The clothing is necessarily soaked with urine, and it causes a strong ammoniacal odor about everything connected with the patient. The skin is also excoriated and tender.

Operations for the relief of these patients should always be undertaken. Success has attended even the most severe cases.

UNDESCENDED TESTICLE—CRYPTORCHIDISM.

Children born at the full term may have the testicle in the inguinal canal, or even in the abdomen. In foetal life the testicles lie in the abdominal cavity below the kidneys. We have seen several cases of undescended testicle. Usually no symptoms attend this condition, and, if left to itself, the testicle usually descends. If it be in the inguinal canal, descent may at times be hastened by manipulations. If the condition persists without any symptoms, it had best

be left alone. Should it, however, give rise to much pain or tenderness, or make for itself a false passage, the testicle had best be removed.

BALANITIS.

Balanitis is an inflammation of the prepuce and glans. It is usually the result of an adherent prepuce or phymosis, or of an injury. These conditions are an obstruction to cleanliness, and as a result there is a decomposition of the smegma, and a resulting infection of the mucous membrane.

There is usually a swelling and redness of the prepuce, with an eversion of the mucous lining. If retraction is attempted, there is much pain. At first there is no discharge, but in a few days a purulent discharge can be pressed from beneath the prepuce. This discharge is acrid and produces considerable irritation. The disease usually subsides in two or three days, but may prove quite obstinate unless cleanliness is strictly enjoined.

TREATMENT.—The treatment in the larger number of cases is strict cleanliness. This is enjoined for the removal of the irritation and infective material. Frequently douches with hot water are all that is necessary. As soon as the foreskin can be retracted, this should be done, and the parts should be washed with some antiseptic solution, and then dusted with some absorbent powder, such as Boracic Acid. In obstinate cases it may be necessary to slit the prepuce in order to properly cleanse the parts. After the subsidence of the inflammatory action, if phymosis exists, circumcision should be performed.

URETHRITIS.

Urethritis in the child is of very unfrequent occurrence, yet occasionally a case will be met with. It is pretty diffi-

cult to always determine the cause of the inflammation. Sometimes it is undoubtedly venereal.

SYMPTOMS. — The child will complain of pain in passing urine, and, if the disease is severe, will suffer intensely from this cause. Upon examination, the prepuce will be found much swollen, the penis tender, and a more or less abundant discharge will pass from the urethra.

TREATMENT. — Of course, it is hardly possible to always determine the cause of the difficulty, and we will treat it as a simple inflammation. The parts should be kept scrupulously clean, and a piece of absorbent cotton saturated with some antiseptic solution can be placed between the inflamed lips of the meatus. Injections are hardly advisable, and are difficult to use in children. Our main reliance is, therefore, cleanliness.

Internally, we would prescribe Cannabis Indica or Veratrum. In place of the Cannabis, Gelsemium is very frequently indicated; so is Rhus Tox., or Eryngium. The bowels might be opened with a saline cathartic every three or four days, but active catharsis is to be avoided.

HYDROCELE.

Hydrocele is occasionally met with in young children, and gives rise to considerable alarm upon the part of the parents. In some cases it is congenital, the inguinal canal not having been closed after the descent of the testes. In these it may sometimes be associated with congenital hernia.

Four varieties have been described:

First. The congenital, in which the tunica vaginalis communicates with the peritoneal cavity, and in which the tumor is reducible either by position or pressure.

Second. In which the canal of the tunica vaginalis is closed and the pouch shut off from the general peritoneal

cavity. This variety gives translucency and the elastic feeling of hydrocele.

Third. Hydrocele of the cord, which is a rare form. Here the pouch is open above, communicating with the peritoneal cavity, but closed below. This form may be complicated by a hernia.

Fourth. Encysted hydrocele of the cord. Here the pouch is open somewhere in its course, being closed above and below.

If the enlargement is caused by the distension of the tunica vaginalis with water, palpation will detect the movement of the fluid, and when the child cries we will find no movement communicated to the swollen scrotum. On the contrary, if a scrotal hernia exist, the movements of the diaphragm in the act of crying will be communicated to the hand supporting the scrotum. In this case also there will be no movement from side to side, as when distended with fluid. The diagnosis between hydrocele and hematocle is readily effected in the child by the marked change of color in the last.

TREATMENT. — The object of treatment is the obliteration of the sac. In some cases we will be successful in removing the fluid and curing the disease by a stimulating application and compression. Collodion would prove a good application, as it would facilitate absorption. Tincture of Iodine has been recommended as an application to the part, to stimulate absorption, but we think it would be too irritating. In young children and infants the majority of cases disappear spontaneously.

If these means should not succeed, the scrotum may be punctured with an exploring needle or small trocar, and the fluid drawn off. If now the part is supported by a well adjusted bandage, we may expect a radical cure. In young children and infants the injection of an irritant, like Thuja or Iodine, is scarcely ever necessary.

VULVO-VAGINITIS.

This is a catarrhal inflammation of the mucous membrane of the vulva, vagina and urethra.

A slight discharge from the vulva is not of unfrequent occurrence in children from one to twelve years of age, but it is only in exceptional cases that it is severe, and produced by an active inflammation at first, but which, as it declines, becomes chronic and very stubborn. These last are very troublesome cases, and are a source of great annoyance both to the physician and to the family.

CAUSES. — The slight discharge is the effect of cold, after over-exertion in the use of the lower limbs. This may also be a cause of the active inflammation, or it may be produced by acridity of the urine, irritating and excoriating the vulva, the inflammation arising in and extending from this part. In some cases it may arise from want of cleanliness, especially in those who are badly nourished.

It may follow the infectious diseases, or from the introduction of some foreign substance. It may also be the result of a traumatism.

In some cases the inflammation is specific in its character, and is produced by the gonorrhœal virus.

The contagion is the result of direct contact, either intentional or accidental.

SYMPTOMS. — The first form is usually a sub-acute catarrhal inflammation. The first symptom is the discharge. In the mild cases this is thin and yellowish-white in color. The pain, itching and burning interfere with locomotion and micturition. There is a frequent desire to void urine, which is attended with pain and burning. In the severer forms the discharge is more abundant and of a yellowish-green color. The parts are swollen, hot and tender. The labia adhere and the secretion drying forms crusts. The discharge excoriates the skin of the thighs

and there is a fetid odor. All visible parts are affected. When it is of gonorrhœal origin, it begins usually in the urethra, although it may be, when first seen, that all parts are affected.

The discharge is copious, thick and yellow. At first there may be slight fever and general indisposition. Micturition is frequent and painful. The only positive method of diagnosis between the specific and non-specific form is by the microscope.

TREATMENT. — The treatment is unsatisfactory in many cases, from the difficulty we experience in getting a proper application of local remedies. Indeed, with the best assistance the mother can give, we make but slow progress.

The first thing in the treatment is isolation and the proper care of clothing and linen for the protection of the family.

The child is put upon the use of Aconite with Cannabis Indica in the usual doses, when there is burning and scalding of urine; or in place of the last we might give the Gelsemium. The bowels are gently opened by Magnesium Citrate or Sodium Phosphate every two or three days. Strict cleanliness is to be enjoined, and Salicylic Acid and Borax or Potassium Chlorate as a local application. This may be applied to the vulva only, or if the discharge is vaginal it may sometimes be used with a syringe. Bathing the parts with hot water alone (as hot as can be borne comfortably) will sometimes effect a cure.

In place of the above, a solution of Boracic Acid may be used. A piece of absorbent cotton wet with the solution may be placed between the labia and the child kept in bed. The thighs may be protected by ointments or an absorbent powder, preferably the latter. Dust freely after each cleansing with Lycopodium.

Perseverance in these means will relieve the acute inflammation, and many times will effect a radical cure.

The general treatment in the chronic form of the disease will be of a tonic and restorative character.

The general health must not be overlooked, and when due to malnutrition or anaemia, we should use according to the necessities of the case, such remedies as Iron, Comp. Syrup of the Hypophosphites, Cod-Liver Oil, Arsenic and other tonics.

MASTURBATION.

The practice of onanism is of very common occurrence after the twelfth year, or about the commencement of puberty. But at an earlier age than this we will find occasional instances of the vice, which will give us much trouble. We have seen it as early as the second year, and in one case, the boy being in his fourth year, it had proven a cause of severe constitutional disturbance.

It is difficult to determine the cause of the habit in children of this age, as the organs are yet undeveloped, and we are taught to believe that the venereal appetite is not present until the age of puberty. It is our impression that the habit of handling the parts is sometimes attained at a very early age, and attended with erections, is found pleasurable, and is repeated for this reason. We have noticed this occasionally, and even in this slight degree, if continued but for two or three months, it will give rise to marked irritability of the nervous system and impaired health.

In the severe cases we find the child has lost flesh and is much debilitated. There is marked depression of the nervous system, and the child has a furtive and uneasy look. It is easy to see that the mind is affected, that the child does not receive natural impressions, and that its reasoning power is impaired. Sometimes it seems to suffer from spinal disease, at others from disease of the lower extremities, and again from disease of the brain. Some

cases seem to be dependent upon inactivity of the stomach and bowels — dyspepsia, — and treatment is directed to this with the expectation of restoring the health and strength by the use of bitter tonics and restoratives.

We recognize the difficulty by the furtive, uneasy look of the patient, and by the disposition to rub the thighs together, and move the lower part of the body. In the milder cases the child does not seem to appreciate but what it is all right, and will carry the hand to the penis while you are conversing with him. In the protracted cases the child seems as much impressed with the offense as the adult, especially if he has been reproofed for it; and practices it secretly whenever he has an opportunity. If the penis is examined in these cases, the prepuce will be found red and irritated, and occasionally the organ will be more developed than is usual at the age.

If continued, the practice will lead to epilepsy, idiocy, or to impairment of the general health.

TREATMENT. — In the milder cases, those which have continued but a month or two, we may break up the habit by close attention and mild reproof. Gentle means are much better than harsh, persuasion than force, and if the matter is properly presented to the parents, and they will take advice, we will get along well with the patient.

When the habit is well established, we put it beyond the child's power to continue it by vesicating the surface, so that handling will be painful and an erection impossible. Tincture of Cantharides or Cantharidal Collodion will answer this purpose well. It should always be applied without the patient's knowing of the purpose for which it is used, which can very readily be done, and it should be so repeated that for one or two months the organ must remain at rest.

In the meanwhile, by the use of tonics and restoratives, nutritious diet, baths, and exercise in the open air, we

restore the general health, and at the end of a couple of months we find the habit broken and the health restored.

When the habit is due to phimosis, circumcision is the first step to cure, and not infrequently cures. If caused by vesical calculus, this should be removed. Constipation sometimes causes it, and must of necessity be cured. Likewise worms, or a balanitis, must be removed, or cured before attention is directed to the removal of the habit.

CHAPTER XIII.

DISEASES OF THE NERVOUS SYSTEM.

Lesions of the nervous system exert a very important influence in disease, and we rarely find a case in which they do not form a part, and must be estimated in the diagnosis. They also exert a more or less marked influence on all pathological changes, and it is through the nervous system, to a considerable extent, that we are enabled to modify and change the various processes of life.

The nervous system of the child is peculiarly susceptible to the causes of disease, and equally susceptible to the influence of remedies. Hence, minute doses of *direct* medicines are found preferable to large doses of such as act in an indirect manner.

The susceptibility of the nervous system of the child is no doubt due, in a measure, to the relatively larger size of the head in the child than in the adult. The peculiarities of nervous diseases in early life are in part due to the rapid growth and immaturity of the brain and cord. Apparently trifling causes produce marked nervous impressions in children. This depends upon the irritability of the nervous centers and the greater irritability of motor, sensory and

vaso-motor nerves. This irritability of nerve centers and peripheral nerves, and lack of control of motor ganglion cells of the cord, account for the frequency of convulsions in children from apparently slight causes.

Physicians of experience realize the importance of reflex irritation, and the consequences produced from such irritation arising from such sources as worms, eye strain, digestive disturbances or phimoses.

This sensitiveness of the nervous system in infancy and children calls for the utmost hygienic care. All stimulants, such as tea, coffee or alcohol, should be withheld. Care should also be taken to avoid undue labor or exertion, that would produce unnatural excitement or mental strain. Plenty of time for out-door play, rest and sleep is essential to their welfare.

In diagnosing mental and nervous diseases in young children the physician employs the same methods as in the adult. At times difficulties are presented by the age and want of intellectual development or growth of the child. We are then compelled to rely upon the acuteness of our powers of observation. The comparative size of the head and body, of the opposite limbs, or even individual muscles, should be noted. So should the position assumed by the child. Every physician is familiar with the retraction of the head in cerebro-spinal meningitis; of the fixation of the body in spinal meningitis, or the constant rolling of the head in acute cerebral disease. The shape of the head and the expression of the face often bespeak a want of intellectual power and convey a volume of knowledge to one in the habit of exercising careful observation. In certain diseases heredity plays its role, and careful inquiry must be directed in that channel.

For purposes of precision, the same tests and methods are employed as in the adult, modified only by the age of the patient. These are, the electrical current, examination

of the reflexes; tactile sensibility, of the special senses, motor power and of co-ordination.

CONVULSIONS.

Convulsions are really but a symptom or expression of disease, and not a form of disease. The name is used to designate a series of convulsive or rhythmical spasms of the muscles of some portion of the body, or of the entire body.

ETIOLOGY.—Convulsions occur far more frequently during childhood than after puberty, though they may be occasionally noticed at all ages. This frequency points to the excitability and instability of the motor mechanism of the brain, which is partially accounted for by the rapid growth of the brain during the first few years of life, and the consequent want of development of the inhibiting power. When they are not the result of organic disease, their occurrence indicates a functional involvement of the brain in connection with disease in some other portion of the body. They denote cerebral irritation, and any process which causes this irritation, either directly or indirectly, may produce a convolution.

The causes giving rise to them are various. Heredity is a predisposing cause of some importance, as well as is the nutrition of the brain. A predisposition seems to exist in some families, the children having convulsions from the slightest cause. When occurring in the first few days of life, they may be the result of cerebral hemorrhage. Sometimes they are produced by disease of the brain and spinal cord, or some obscure lesions, such as a tumor, abscess, or a meningitis. They frequently occur at the onset of the acute infectious diseases, seeming to bear the same relation to the disease in the child that the chill does in the adult.

They are often of reflex origin. Thus, we find convulsions arising in this way during dentition, from crude or acrid ingesta, from irritation of the stomach or bowels, and from the irritation produced by worms. They may also be caused by metallic or organic poison, as in uræmia; from inflammation of internal organs, or disease of the surface, attended with great irritation and pain, or be the result of traumatism or shock.

PATHOLOGY. — The scalpel reveals no constant lesion to account for the symptoms. The convulsion has been described as an explosion of nerve force, as in epilepsy, due to the lack of development and controlling influence of the higher cerebral functions. The condition of the brain is described as anaemic in the beginning of an attack, followed shortly by intense venous hyperæmia. In infants dying of convulsions, the brain and meninges are usually congested, with possibly punctate hemorrhages. The lungs are congested, and the right side of the heart is distended with dark clots.

SYMPTOMS. — If convulsions occur during disease, they are generally preceded by tolerably well-marked symptoms; and, though not always constant, it is well to give them due consideration. The most marked of these is a sudden, jerking, involuntary movement of the extremities, and quick, grasping movement of the hands. This will be observed when the child sleeps as well as when awake, and is sometimes increased by motion. Usually the child sleeps with its eyes partly open, and we observe that the globe of the eye is drawn upward and rolled about, and this involuntary movement of the eye may be frequently noticed when awake. With these symptoms there may be excitement of the nervous system, manifested by restlessness, fits of crying, and sleeplessness; or we may have the reverse, the patient being dull, impassible, and somnolent.

The first thing noticeable is a peculiar pallor of the face. The eyes become fixed, then ensue twitchings of the muscles of the face and eyes, then of the extremities, and finally involving the entire body. The head is thrown back, and the hands clenched, the thumbs being buried in them. The convulsion is usually very marked, but in some cases we find it slight or entirely absent, the patient being rigid and remaining in one position. Respiration is labored, in many cases very markedly so, and in these the countenance is turgid and purple, and the features distorted. The pulse is very frequent and small, or it is soft, feeble and small, and but little increased in frequency. In the severer cases, deglutition is almost impossible, and respiration snoring. The bladder and rectum may be involuntarily evacuated.

These symptoms may continue from a moment or two to fifteen minutes or half an hour, in the milder cases terminating in a return of consciousness, but in the severer in a deep sopor, from which the patient can not be aroused. One convulsion may terminate the attack, but in many cases one succeeds another for from one to twenty-four hours. The interval between the spasms is frequently marked by nothing more than a relaxation of the entire system, and restoration of the power of deglutition, the patient being in a semi-comatose condition, and totally unconscious. Children having convulsions once are usually more liable to them than others, and they will frequently have convulsions from slight causes.

DIAGNOSIS. -- The diagnosis of convulsions is very easy, there being no possible chance of mistaking the symptoms. The sudden loss of consciousness, convulsive movement, difficult respiration, and frequent, small pulse, can not be confounded with any other disease. The difficulty lies in ascertaining the cause, whether due to a cerebral affection, marking the onset of an acute infectious disease, or some

disorder of the alimentary canal. The history and other symptoms assist in arriving at a decision. If accompanied by a high temperature, the probability is, it is premonitory to some acute disease. It is true that we can not distinguish between simple convulsions and epilepsy, except by the lapse of time. This fact is true to some extent regarding any convolution in arriving at a decision as to its cause.

PROGNOSIS. — The prognosis depends upon the cause of the convolution. Reflex convulsions are rarely fatal. Neither are they when occurring at the onset of an acute febrile disease. Should they occur later, in the progress of the disease, they indicate some complication, and are of graver significance. Occurring during the first few days after birth, they signify some serious disease of the brain. They are always serious when occurring during the course of a nephritis, when prolonged and frequent, accompanied by great prostration, feeble pulse, or stupor.

TREATMENT. — Our primary object is to arrest the spasmodic movement which is so alarming to the friends, and, no matter how often seen, to some extent to the practitioner. Calmness and decision are very important requisites in this case, as all around the patient is excitement, and a hundred expedients to benefit the sufferer are proposed.

The remedies principally depended upon for controlling convulsions are: Chloroform by inhalation, Chloral Hydrate by the rectum, and Morphine hypodermically. They are named in the order in which we esteem them.

Chloroform is undoubtedly the most reliable remedy, and can be given to the youngest child. If the convulsions are severe, with but little interval between them for the administration of medicines, or if, owing to their severity, we can not see the indications for remedies, Chloroform should be used by inhalation to the extent of complete

arrest of convulsive action, and continued until we are satisfied that we have the case well in hand. The indicated remedies should be given as soon as the patient can swallow them.

Chloral Hydrate can be given at the same time as an enema, and repeated each hour until the tendency to return ceases, the Chloroform being used only during a paroxysm.

Morphine we have used successfully when the enema could not be retained, when the heart's action was weak, or when, from any cause, we did not deem the inhalation of Chloroform safe. Absolute quiet is required.

The mustard bath we do not favor, preferring cold applications to the head, the body being kept warm. When the convulsions have ceased, we endeavor to prevent their recurrence by keeping the patient quiet, and by the administration of the remedy or remedies indicated.

We will add to a half glass of water Aconite or Veratrum (as indicated), and Gelsemium, and give a teaspoonful every ten or fifteen minutes, until the convulsions are arrested, then less frequently, when there is fever, with flushed face and irritability.

If there is a markedly pinched expression about the eyes or base of the brain, Rhus will take the place of Gelsemium. It is especially indicated by sudden startings and a shrill cry (*cry encephalique*).

When the patient is full-blooded, and the face and neck are full or red, Potassium Bromide may be given.

Passiflora will stop convulsive action where there is extreme restlessness and insomnia, not due to pain. It is especially effective when the sleeplessness occurs during fever.

Lobelia will be indicated by an oppressed circulation and respiration, fullness of tissue, and want of expression, when the convolution has passed off.

One of the best remedies, if not the very best, to prevent

a recurrence of convulsions, when they have been arrested, is the Ammonium Bromide. For children I usually prescribe it $\frac{3}{4}$ ij. to Water $\frac{5}{4}$ iv., and give teaspoonful doses as often as may be required (usually every three or four hours). It may be given for the arrest of convulsions in some cases with most excellent results. When children are inclined to convulsions, the preparation of Ammonium Bromide should be kept in the house, and its administration directed when the child shows the slightest symptoms of convulsive action.

The cause should be sought always, and the patient treated accordingly. If we have reason to believe that there is irritant material in the intestinal canal, use an enema of warm water. Occasionally an enema of Chloral, given to allay the convulsions, accomplishes the object desired.

"An ounce of prevention is worth a pound of cure"—at least, it saves us much trouble. Gelsemium, Belladonna, Rhus, Lobelia, Apis, Veratrum, Ammonium Bromide, as indicated, will usually relieve the nervous irritation. The rule may be repeated: "The indicated remedy is the remedy to prevent convulsions."

EPILEPSY.

Epilepsy has been defined as a disease characterized by the habit of having convulsions, the patient losing consciousness, and with a tendency to progressive mental impairment. It is one of the most serious of the diseases of the nervous system, not because of its fatality, for it runs a very chronic course, but because there is no tendency to spontaneous arrest, and medicine has heretofore had very little influence upon it. One of the most distressing features of the disease is that it gradually impairs the mind, until the person, once bright and of sound mind,

becomes a driveling idiot or a raving maniac. Epilepsy has been divided, expressive of the severity of the spasm and impairment of consciousness, into "major or grand mal" and "minor or petit mal."

Etiology. — The causes of epilepsy are various, and are not very well understood. The role of heredity is acknowledged by all writers. It seems clearly established that syphilis and alcoholism in the parents transmit to their progeny a tendency to the development of epilepsy, as well as to other nervous diseases. Whilst heredity is admitted to be a predisposing factor, some exciting cause seems necessary to induce the first convolution. Owing to their recurrence, convulsions soon become the habit. A variety of exciting causes have been named to account for the first seizure, such as fright, blows or falls upon the head, masturbation, disturbances of menstruation, indigestion, chronic constipation, and phymosis. It is said to have followed the acute diseases of childhood.

Pathology. — The knowledge of the pathology of epilepsy is very meager and unsatisfactory. The spasm is said to be the result of the sudden overaction of the nerve cells, or a violent liberation of nerve force. The changes found are said to be located in the pyramidal cells of the cortex and in the neuroglia. It is therefore in the gray matter of the cortex, and is degenerative in character. Little is definitely known of the true nature of these changes.

Symptoms. — The division of epilepsy into grand and petit mal is made in accordance with the severity of the symptoms.

In some cases there are brief premonitory symptoms of the approaching seizure, called the aura, and, rarely, the patient has notice of it for hours. The sensations differ in different cases, and may be motor, sensory, or epigastric;

sometimes a sense of weight and oppression in the head, with giddiness and loss of voluntary power; in others, a coldness passing from the feet upwards, and terminating in the epileptic seizure when it reaches the head; flashes of light, sudden blindness, strange noises, tinnitus, burning or pain in the extremities, stomachic sensations, such as fullness, oppression, or pain. In the more protracted cases, there is usually a marked dullness and hebetude, noticed by the friends, and the patient feels a loss of mental responsibility that is very unpleasant.

In an attack of epilepsy there is usually an initial cry; the face becomes pale, the pupils dilated, the eyes rolled up in the orbit and fixed; the patient becomes suddenly unconscious and falls to the floor. Involuntary movement from spasmoid contraction and relaxation, is characteristic of the disease, and may be very intense or mild. If severe, the limbs are thrown in various positions, the trunk contorted, and the features remarkably changed. First one group of muscles contracts and then another, so that parts are kept in constant movement. The lower jaw and tongue being also affected, we find that usually the latter organ is severely bitten, if means are not taken to avoid it. The patient usually froths at the mouth; respiration is normal in frequency, and the pulse but little changed, except that it is smaller and feebler. The countenance is not only distorted by the convulsion, but in some cases is turgid and purplish, or almost black. Frequently the urine, and sometimes the faeces are passed involuntarily during its continuance.

The duration of the epileptic seizure is variable, sometimes lasting but a few seconds, and at others for fifteen or twenty minutes. The patient may have but one attack at a time, or they may succeed one another at short intervals, until quite a large number have passed. When the attack ceases, the patient becomes completely relaxed, and usually

falls into a deep, comatose sleep, from which it is almost impossible to arouse him for an hour or two. The frequency of their recurrence varies in different cases; in some they do not appear oftener than once a month; in others, every week, or almost every day. Sometimes they are so distinctly periodic that the return can be closely calculated, but at others they are very erratic in their course.

Petit mal presents a variety of symptoms, and may be so slight as to attract but little notice. In these the patient seems to lose consciousness for but a moment, and stares vacantly at persons present. The convulsion passing off, he has no recollection of it, nor of the epileptic attack.

These attacks are often attributed by the friends to the patient being absent-minded, or to a faint. These patients are often said to have "spells." The change in the child's mental condition finally reveals the serious character of the trouble. The convulsive or paroxysmal stage should always be studied closely, as it may reveal the cause or the seat of the lesion. Universal movements point to hereditary epilepsy, whilst unilateral or partial convulsions are due to an organic cerebral affection.

The course of epilepsy is extremely irregular. The patient may escape a seizure for six months, or even a year, when it will reappear with increased severity.

The mental condition of patients afflicted from childhood is always retarded, and at times deplorable. The earlier in childhood the disease appears, the more marked is this mental impairment. It may be seen in all degrees, from the stupid, dull child to the melancholic and the maniacal.

DIAGNOSIS.—The diagnosis of epilepsy in its typical form is not difficult. Petit mal presents some difficulties in diagnosis, as well as does nocturnal attacks. The latter can often be detected by the biting of the tongue, the blood upon the pillow, and the headache and lassitude occurring the following day. The former may be diagnosed only by

a careful study of the patient for some time. There will ordinarily be no difficulty in distinguishing epilepsy from hysteria. In my own experience, the latter is rare in childhood.

PROGNOSIS. — So far as regards the cure of the disease, the prognosis is not very flattering. Death is generally due to some other cause. When the disease is clearly dependent upon some removable cause, the outlook is more favorable. In a case under our care, a circumcision has resulted in a perfect freedom from seizures to the present time — a period of about ten years.

TREATMENT. — The treatment in these cases is of two kinds: that for the arrest of the paroxysm, and that for the radical cure of the disease. If called to see a person suffering from an attack of epilepsy, we would place the patient in such a position that he will not be likely to injure himself, and if the convulsive action is severe, get a friend to hold a cork or piece of soft wood between the teeth to prevent biting the tongue. Usually this is all that is necessary, except in cases where the patient has a succession of attacks, when we may use the Gelsemium for the same purpose, giving it in doses of from ten to twenty drops, or even half a drachm, every ten or fifteen minutes, until the full relaxant influence of the remedy is produced.

We may attempt a radical cure in all cases in which there is no structural lesion of the spinal cord or brain, or their enclosures. If there is, the case becomes one for the surgeon, rather than the physician, though operations thus far have not proven very successful. If we can detect any lesion of function, especially if it seem to bear a relation to the epileptic seizure, we would employ remedies for its removal. Thus, in rare cases, a cure will result from the removal of worms, and relief of irritation of the intestinal canal; from the relief of menstrual irregularity; by estab-

lishing and maintaining free secretion of the kidneys, when functional lesion of these organs has been prominent, etc. In some cases the disease appears to be dependent upon spinal irritation and determination of blood, and occasionally a cure may be effected by the use of the irritating plaster to the spine, and the administration of Gelsemium, Belladonna, Ergot and Nux Vomica may be used when there seems to be feeble circulation in the nervous substance and tendency to congestion, manifested by symptoms of paralysis, or a feeling of deadness, coldness, or tingling, as if the part were asleep. Cannabis when there is headache and pain. We have frequently combined this remedy with the Bromides with good results.

Many remedies have been advocated in epilepsy; among the newer ones, we mention only those which seem to possess some merit. Adonis Vernalis seems to possess some degree of usefulness. We have never had any experience with it. We note the fact, however, that it is usually combined with some of the Bromides. *Œnanthe Crocata* is one of the newer remedies advocated for this dread disease. We have used it with some degree of success in cases of petit mal in young girls, and in a few cases of grand mal, where the Bromide treatment had been pushed for some time without results. It must be given in small doses: three to five drops to four ounces of water, and a tea-spoonful of the mixture three or four times daily. *Solanum Carolense* is recommended in epilepsy when seemingly dependent upon irregularities of the menses, and in epilepsy of children. Amyl Nitrate is recommended as an abortive to an attack. It can be used only when there is a distinct aura. The remedy is hardly serviceable in children, but adults can carry the pearls and use them by inhalation for the purpose of staying an attack.

In a large majority of cases, however, there is no lesion that would seem sufficient to occasion the epileptic seizure;

and even where there is, and we have removed it, by relieving all sources of reflex irritation, and restored all the functions of the system, the nervous disease will still continue. Here our treatment will be, to a great extent, empirical. We have employed the Sodium Bromide in our practice with the most success — sometimes using it alone, and at others in combination with other remedies. We prescribe it in the proportion of half an ounce of the salt to four ounces of water, of which the dose is a half to a teaspoonful three or four times a day. If we are to expect success, the remedy must be persevered with, and if the quantity named is not sufficient, it should be increased to such an extent as to hold the paroxysms in check. After twenty years' experience, we can still recommend Sodium Bromide, especially in early life. If the patient is stout, has a vigorous circulation, and suffers from excitement of the reproductive organs, Potassium Bromide is the remedy. The Potassium Salt is not as well tolerated by the stomach as is the Sodium, and induces a muscular weakness and bromide acne if persisted in for any length of time. The same can be said of Ammonium Bromide. Lithium Bromide is recommended by some eminent neurologists. It can be used in those intractable cases associated with lithæmia. The treatment must be persisted in for some time, if any success is to be attained. It should be given for at least one or two years after all fits have ceased, gradually lessening the quantity. Our method is to give one dose at bedtime for some time after an apparent cure, even during the third year.

All undue excitement must be avoided in epilepsy, the sufferer leading the most regular life. Some employment should be furnished that would amuse the mind, and keep it normally active, but much mental exertion is injurious. Above all things, excessive sexual excitement is most injurious, either as solitary vice or irritation of the organs

from disease, and it will become the practitioner's duty to examine into the case with reference to this matter, and give the necessary advice and treatment.

TETANUS.

Tetanus is a disease of the central nervous system, characterized by continuous tonic spasms, with occasional clonic ones. The disease in children is identical with that of the adult.

Infantile tetanus is of very rare occurrence, and a physician may be in practice a lifetime without seeing a case, excepting in regions where it is endemic. It occurs most frequently in the children of the poor, especially in badly ventilated dwellings, and when the mother and child have had insufficient food, clothing, etc., and a want of cleanliness. That it does not always depend upon these conditions, I have evidence in one case that came to my knowledge, in a family in comfortable circumstances.

ETIOLOGY. — The conditions above named may be considered as predisposing causes. The exciting cause is an unhealthy inflammation of the navel; irregular wounds, burns, scratches, or other traumatism. It is claimed, at present, to be due to infection, and is often classed as an infectious disease.

PATHOLOGY. — There are no characteristic anatomical changes found in tetanus. There is evidently an increased irritability of the convulsive centers in the brain. Hyperæmia of the spinal cord and membranes are found, with occasionally small punctate hemorrhages. The lungs are usually congested, and the right side of the heart distended.

SYMPTOMS. — Infantile tetanus is usually due to an infection of the umbilical wound, and is frequently called "trismus neonatorum." Usually the first and most alarming

symptoms are the affection of the muscles of the neck and the opisthotonus.

The disease may make its appearance in a day or two after birth, but more frequently about the ninth day. The child is observed to be restless and fretful, sleeps badly, and has paroxysms of crying which seem like colic. It moves the lower extremities in a peculiar manner, and does not nurse well, the difficulty being due to the rigidity of the muscles of the neck and jaws. This stiffness gradually increases until the head is retracted and the jaws become clenched. The back becomes straightened, then arched, opisthotonus. The eyebrows are raised, the lips pressed against the teeth, the mouth distorted, and the face assumes the expression described as "*risus sardonicus*." The entire body becomes rigid and stiff, the arms are extended, the hands clenched, and the thumbs adducted. This rigidity is extremely painful and clonic; exacerbations render the condition more distressing. Deglutition and respiration are rendered difficult by reason of the spasm of the glottis and respiratory muscles. The pulse is rapid and feeble. The temperature may be normal at first, but rises rapidly throughout the course of the disease. The bowels are constipated, and the urine scanty and high-colored. The symptoms increase in intensity as the disease progresses, which usually proves fatal within a fortnight. Death is usually the result of exhaustion, the fixation of the respiratory muscles, or of laryngeal spasm.

DIAGNOSIS. — The diagnosis is easy in the majority of cases. It might be mistaken for tetany. It should be borne in mind that in tetany the spasms are from the periphery inward, and that distinct intervals in the spasms also occur.

PROGNOSIS. — There is probably no disease in which the mortality is greater. In localities where it appears to be an endemic disease, it is regarded as being uniformly fatal.

TREATMENT. — Prophylaxis is the most important consideration in the treatment. This consists in cleanliness and the proper treatment of wounds, so as to avoid infection.

During an attack absolute quiet must also be secured. Noise and movements aggravate the spasms. The remedies used are such as will allay or overcome spasm. Foremost among these is Chloroform by inhalation. Chloral Hydrate is also one of our best remedies, and possesses the advantage that it can be given for some time without ill effect. It should be repeated several times a day, according to the needs of the case.

Morphine has been recommended, using it hypodermically. In children, we prefer the Chloral Hydrate. Physostigma is also recommended to relieve the spasm. The extract may be used hypodermically.

Other remedies which may be used to allay the spasms, or given after their severity is allayed, are Gelsemium in quite large doses; the Bromides, Passiflora, Conium, and Jaborandi. Of these remedies, we believe the Jaborandi the best remedy. Like the Physostigma, one of its active principles, Pilocarpine, can be used hypodermically. It must be used with caution, as it is a powerful depressant.

TETANY.

Tetany is characterized by tonic, muscular spasms of various groups of muscles, especially of the upper extremities. These spasms may be intermittent or continuous. It is a rare disease in this country. When occurring in infancy, it is usually associated with laryngismus stridulus.

ETIOLOGY.—It may occur at any age, but is most frequent in infancy. When occurring at this age, males are more frequently attacked than females. In older children, it occurs more frequently in females. It is said to be rarely

a primary disease, but may occur as a complication of any exhausting disease, such as rickets, chronic diarrhoea, or marasmus. It is also said to have followed typhoid fever, pertussis, measles, and rheumatism. Gastro-intestinal irritation, from any source, is said to be an exciting cause. Delayed menstruation in girls at puberty is also enumerated among the exciting causes.

PATHOLOGY.—No positive or constant anatomical lesions have yet been found in tetany. The theories advanced are to a great measure speculative. It is said to be a neurosis, dependent upon disturbances in the nutrition of the nerve cells of the spinal cord and medulla.

SYMPTOMS.—The onset may be suddenly announced by spasms, or be preceded by sensory disturbances, such as vague, tingling pains, or formication in the upper extremities. Stiffness soon follows; then spasms of the muscles, most frequently of the upper extremities first. Both sides of the body are usually affected. Rigidity follows, and is so severe passive movements are almost impossible. The contractures vary with the group of muscles affected. When the upper extremities are involved, the fingers are fixed at the metacarpo-phalangeal joint, the phalanges are extended, and the thumbs adducted almost to the little fingers; the wrists are flexed at an acute angle, and the hands drawn to the ulnar side. During the intervals between the attacks the patients may appear well, save only some weakness, and a slight rigidity of the affected muscles. An attack may be produced by pressure upon the large nerve trunks and arteries of the extremities affected, which ceases as soon as the pressure is removed. This is known as Troussseau's symptom. Electrical excitability is also increased, as well as is the mechanical, as can be shown by a light touch of the percussion hammer, or by pressure with a lead pencil upon the nerves. Pain of a

sharp, lancinating character is present, and is said to be due to the spasms. There is neither loss of consciousness nor fever. Its duration is from a few days to several weeks. The mild form seen during infancy passes away in from two to three weeks, though there may be relapses and secondary attacks.

DIAGNOSIS. — The diagnosis is based upon the fact that the spasms are bilateral, and usually confined to the hands and feet. Pressure upon the nerves increases the spasms. The reflexes are exaggerated, there is no unconsciousness, and we have the fact of a previous exhausting disease, usually rickets or some form of gastro-intestinal derangement.

PROGNOSIS. — The disease is not fatal, being, as was just said, usually the result of a general disease.

TREATMENT. — The treatment is wholly symptomatic. The spasms are to be relieved by means of such agents as have been previously mentioned. Bromides, Chloral Hydrate, Passiflora, Gelsemium, or Chloroform by inhalation, are used according to the conditions present. In connection with these agents, hot baths and friction should be used.

Every cause or source of peripheral irritation should be removed if possible. The digestive tract should be carefully treated, and any existing disease, such as rickets, malnutrition, or marasmus, appropriately treated by means of diet and medicines.

CHOREA.

Chorea, or St. Vitus dance, is a functional nervous disease characterized by irregular, involuntary twitchings of some or all of the voluntary muscles of the body, the twitchings usually ceasing during sleep.

Etiology.—The disease is a neurosis of childhood and early adolescence. It occurs most generally about the age of puberty, though it sometimes appears as early as the third or fourth year, and as late as the thirteenth, and in some cases later than this. It is confined principally to the female sex, but is met with in the male. We usually find it in persons of feeble health and precocious mental development. It is said to be influenced by season, most cases occurring in the spring. It is often a sequel of some acute disease, and a relationship has been sought to be established between it and acute articular rheumatism, as well as cardiac diseases. It is probable that the cardiac affection is frequently of rheumatic origin. The exciting causes are fright, overwork mentally, and undue excitement. Anæmia also has an important etiological bearing.

Pathology.—Like epilepsy, chorea is classed as a general functional disease of the nervous system. It may be, at times, but an expression of an actual cerebral disease, or be purely functional. Its actual pathology and morbid anatomy are unknown and largely speculative. The seat of the changes found is most frequently in the motor areas of the cortex.

Symptoms.—The attack usually comes on gradually, the patient simply seeming to be unusually nervous, and the first evidences of chorea are occasional involuntary movements of the hands and the facial muscles, and an inability to sit quietly in one position.

It will be noted that the patient experiences difficulty in writing, drawing, or using the hands, any voluntary efforts being executed with difficulty. Very frequently the fingers are quickly and involuntarily moved, and when the patient uses the hands, it is with a quick, unnatural movement. As the disease progresses the involuntary movements become continuous, some part of the body being constantly

in motion, and the movements are now very much exaggerated. If the patient attempts to do anything, she seems to have but partial control over her muscles, and while they are being directed to the end intended, they are going through a succession of movements entirely independent. So great is this, sometimes, that the patient can not sit still, nor even keep the hands quiet for a moment, and her walking is irregular from the same cause. The facial muscles are sometimes very much involved, and the attempt to speak, or give expression to the emotions, is followed by various contortions of the countenance. Sometimes it is almost impossible for the patient to express herself intelligibly, owing to spasmodic action of the muscles of the mouth and of the larynx, which latter condition is, however, fortunately rare. The parts usually affected are the hands and fingers, face and tongue, and at times the legs and trunk. It may affect one extremity, one-half of the body (*hemi-chorea*), or it may be generalized. The movements are irregular, spasmodic, jerking, and awkward. Fortunately for the patient, they usually cease during sleep, but are intensified by excitement, embarrassment, or fatigue.

The electrical reactions are said to be altered, there being an increased response to the faradic and galvanic currents on the part of the muscles and nerves of the affected side.

As before remarked, the general health is usually impaired previous to the commencement of the disease, and this becomes more marked as it progresses; symptoms of anaemia are of common occurrence, the skin being blanched, the pulse feeble, the lips and gums pale, variable appetite, imperfect digestion, and constipation of the bowels. The mind is more or less affected, the patient being low-spirited and irritable, and desiring solitude, the countenance being pale, languid and vacant. In some

instances confirmed chlorosis will be developed during the progress of the disease. It will be noticed that the child has no disposition to play or to take exercise, and does not desire to associate with others, but prefers rather to get where her infirmity will not be noticed; the sensitiveness in this respect being sometimes very great.

The complications most frequently met with are rheumatism and cardiac affections. The former would be evidenced by fever and painful swellings, the heart affection most to be feared being mitral regurgitation.

The disease tends to spontaneous recovery. Its course is irregular and uncertain, lasting from a few weeks to as many months. Relapses are frequent.

DIAGNOSIS. — Chorea is marked by such distinctive symptoms that it is easily recognized, the continual involuntary movements not being observed in any other disease. If there should be any doubt as to diagnosis, have the patient protrude the tongue, and note its twitchings. This feature is claimed by some writers to be a pathognomonic feature of the disease.

PROGNOSIS. — Though in some cases very obstinate, the disease is almost always curable. It may last for two or three weeks, or as many months, and in some rare cases for years. If death results, it is due to some complication.

TREATMENT. — Various plans of treatment have been adopted, and many remedies used as specifics in this affection, and, as is usual, we find that where the means are so abundant they are not very efficient. We had much better adopt a rational plan of treatment, by removing any reflex irritation, and getting a normal performance of the various functions of the body, rather than depend upon any one remedy, no matter how highly it is praised. We believe that rest is a prominent factor in the treatment. Attention has been called to the fact that the muscular spasms cease

in sleep. Reasoning from this fact, we have found that rest, as nearly absolute as possible to be consistent with health, assists in the successful treatment of chorea. The patient should be put to bed, and, in connection with rest, warm sponge baths and massage are used daily.

The disease is intimately related to rheumatism in many cases, and the remedies will be selected from the class of anti-rheumatics, to which the reader is referred. Marcotys probably stands first on the list, as it has probably benefited more patients than any other remedy. It is given when the pains are muscular and confined principally to the back and limbs. In some cases it is given alone; in others it may be combined with Aconite or Veratrum, if there is any elevation of temperature; in others, with Valerian, when there is an enfeebled circulation, restlessness and pallor; and still in others, with Arsenic, when there is the pallid and doughy cheeks, flabby muscles, and emaciation. Sticta, when the rheumatic pains are confined to the shoulders and back of the head; Bryonia, when there is the full and tense pulse, elevated temperature, and rheumatic pains and swelling in the joints; Apocynum, when there is oedema of any portion of the body, associated with or without cardiac affections; Colchicum or the Salicylates, when there is any tendency to rheumatic heart affections — have all been used with good results, as has the Potassium Iodide, when the tongue is broad and of a bluish pallor.

If the disease is associated with amenorrhœa, or irregularity of the menstrual function, this must be attended to. Pulsatilla, when there is despondency, forebodings of evil, dread, nervousness, and pain in the head; Black Haw, when the flow is excessive, irregular, and painful — are agents that will prove useful in some of these cases. The Marcotys, or Cimicifuga, has already been named as a remedy in cases where the patient complains of wandering pains in various parts of the body, or pain in the back and

limbs. We sometimes associate it with Valerian or Scutellaria, when there is restlessness or nervous excitement, with insomnia, or with Cannabis Ind., when these conditions are associated with or due to pain.

It may possibly be, the insomnia will necessitate an occasional dose of Chloral Hydrate or Hyoscyamus. If there be any heart complication, Digitalis, Strophanthus, Aconitum, or Cactus will be found necessary, according to the conditions present. The nutrition must be carefully looked after. The diet must be nutritious and easily digestible. If there is anaemia, some preparation of Iron or Cod-Liver Oil will be necessary. If there be much muscular weakness and atony, Nux or Strychnia, with the addition of galvanism, massage, and the daily warm bath, should be used.

Very much will depend upon the home management of the patient. All causes of irritation must be carefully avoided, and she should be encouraged to take suitable exercise, and try to control the involuntary movements. Out-door exercise, pleasant company, and something with which to constantly occupy the mind exert an important influence where rest interferes with the general health, and it will sometimes be found that where the patient is allowed to have her own way, if not decidedly improper, she will get along better.

DISORDERS OF SLEEP.

The healthy new-born babe should sleep during the entire day and night, save only when being nursed or dressed. It is awake during the first month only three or four hours out of the twenty-four, falling asleep immediately after nursing. When six months old it should sleep fifteen hours per day. The hours of sleep then gradually decrease, until at the end of the year it will sleep about twelve hours out of the twenty-four. An

departure from these averages would indicate that the child is in pain, or that there is a functional derangement. In febrile conditions, children are usually alternately wakeful and drowsy. In childhood, disturbed or restless sleep is much more common than insomnia. In fact, the latter is a rare condition, and when present is usually but an expression of some grave trouble, which should be sought for as speedily as possible.

Disturbed or Restless Sleep is usually due to disturbances of digestion, the result either of overfeeding or of improper feeding. Poorly ventilated and overheated apartments; pain, either from colic or otitis; bad habits, obstructed respiration, either from nasal or pharyngeal disease, are also frequent causes.

NIGHT TERRORS, OR FEAR—PAVOR NOCTURNUS.

We are consulted occasionally with regard to the sudden waking of the child at night, manifesting every evidence of terror. Generally it wakes with a piercing scream, and starts up in bed with affright, and it is some minutes before it can be quieted and assured that it is safe. There may be but one paroxysm through the night, but occasionally there will be two or three. In some cases it will also occur when the child sleeps in the daytime.

Many persons think that this grows out of frights from playmates or servants, or fearful stories about ghosts, giants, robbers, etc., which are so frequently told to children. While this gives rise to a morbid fear, manifesting itself especially after dark, but also following the person in the day, it has little or nothing to do with this case.

In this there is an irritation of the brain, with determination of blood, and the night terrors are similar in their cause to convulsions and epilepsy, the first being of the

cerebrum — the intellectual portion, the second of the spinal cord — or of automatic movement.

The rational treatment consists in the ascertaining of the cause and its removal, as far as possible. Should remedies be necessary, the use of small doses of Aconite with Rhus, given in the afternoon and evening, will frequently remove the unpleasantness. In some cases the indications are very clear for Gelsemium, and we use it in place of Rhus. In other cases there is an irritation of the skin associated with the unpleasant dreams, and Apis or Belladonna will come in play. If the child is nervous and sobs in its sleep, Pulsatilla or Passiflora will be the remedy, and it may be given three or four times daily.

In some cases we will find a torpid condition of the bowels, which will require the administration of a mild cathartic. In some, very small doses of Podophyllin, thoroughly triturated and combined with Hydrastine (Berberine), will be found to answer the purpose well.

Under no circumstances should opiates or *soothing* syrup be resorted to. They only increase the trouble, and, strange as it may seem, a bad habit is formed, no matter how young the child.

ACUTE MENINGITIS.

Acute meningitis is an inflammation of the coverings of the brain, particularly of the pia mater, when it is technically known as lepto-meningitis. It is at times secondary to diseases of the brain proper, and the term may be applied to a number of different diseases, as the symptoms are very similar in these various forms of disease. The variations which do occur depend upon the intensity of the inflammatory process, and upon the distribution of the disease. Acute meningitis is seen under a variety of circumstances. We shall describe it as follows:

- I. Simple acute meningitis, in which class is included secondary meningitis.
- II. Tubercular meningitis.
- III. Epidemic cerebro-spinal meningitis.

I. SIMPLE ACUTE MENINGITIS.

ETIOLOGY.—This form of meningitis occurs after many of the acute infectious diseases, as pneumonia, scarlatina, influenza, typhoid fever, and variola. Sporadic cases may result from traumatism, sunstroke, or otitis media, and frequently no definite cause can be found.

PATHOLOGY.—The inflammation is usually confined to the pia mater, although slight changes will be found in the dura mater and gray matter. The exudation is of a serous character, and there is an increased quantity of the cerebro-spinal fluid. The ventricles are distended with serum or sero-pus, the walls softened, and the arachnoid slightly opaque. In some cases the substance of the brain is oedematous, and may even be watery.

SYMPTOMS.—The symptoms of meningitis are irregular in their course, and though presenting a striking similarity in all forms, they present no typical form or sequence.

The acute symptoms are sometimes preceded by a prodromal stage, lasting for a day or two, which is characterized by a feeling of malaise, general weakness, vertigo, and indifference. In the majority of cases, these symptoms are wanting, and the attack is ushered in by vomiting or convulsions, headache and high fever. The vomiting is of the character termed projectile or cerebral, and occurs after the taking of food or independent of it. The headache is distressing, and the vertigo so intense the child is unable to stand. It becomes listless, drowsy, and sleeps a great deal; when awake, it is irritable and restless.

As the disease progresses, the patient becomes more irritable and restless, the pain in the head increases, there is intolerance of light, ringing in the ears, and intolerance of sound; sleeplessness, and delirium. Up to the third or fourth day the fever is usually continuous, though sometimes there is a slight remission in the forenoon, and the head symptoms increase or continue without abatement. A marked change is now observed; the acute sensibility gives way to torpor, and the delirium becomes low and muttering, or is replaced by coma.

There is contraction and rigidity of the muscles of the neck, hyperæsthesia, retracted abdomen and opisthotonus. The pulse becomes fuller, softer, or slow, or in some cases very hard and frequent. The head and trunk are still hot, the face turgid and of a deeper color, or in some cases blanched and contracted, the pupils dilated, the extremities cool, respiration difficult or irregular and sometimes sterterous, and more or less involuntary movement and twitching of the muscles. The coma gradually becomes deeper, and the insensibility more marked; all the functions are feebly performed. The bowels, at first constipated, are succeeded by a complete loss of both vesical and rectal control. The patient lies on his back, slips down to the foot of the bed, grasps at imaginary objects, and thus slowly sinks or dies in convulsions. During the progress of the disease, the ocular muscles become paralyzed, there being strabismus or ptosis and an optic neuritis.

In children we frequently find inflammation of the meninges, making its appearance during the progress of other diseases. The head becomes hot, the face turgid, the pupils contracted, with great restlessness and constant movement of the head. Though not very marked on account of age, the child is evidently delirious, and the frequent movement of the head, and putting the hands up

to it, show that it suffers pain. In other cases the acute stage has passed without notice, the face is blanched and contracted or white and puffy, the pulse is small and very frequent, and extremities cool, bowels loose, the operations being unnatural and offensive; there is continued movement of the head and restlessness, or a deep stupor or coma. Sometimes the symptoms will continue for three or four days, but at other times the disease will terminate fatally within forty-eight hours.

DIAGNOSIS. — It is not difficult, in the most of cases, to determine the presence of meningitis. The vomiting, convulsion, the heat and turgidity of the face and scalp, the deep-seated and tensive pain in the head, contracted pupils, and the great irritability and restlessness, with the high grade of fever and irregular pulse, are sufficient for the diagnosis. In those other cases in which coma, difficult and irregular respiration, full but oppressed pulse, coldness of the extremities, dilated pupils, etc., are the attendant symptoms, the diagnosis will be very difficult, and if we can not have the previous history of the case, almost impossible.

PROGNOSIS. — The disease almost always pursues a course of from two to four weeks, or even longer. In those cases terminating favorably, there is a gradual return to consciousness, and a slow regaining of health. Unfortunately, the disease frequently leaves its traces behind in the shape of a permanent blindness, deafness, loss or impairment of speech or intellect, or a permanent paralysis. Other cases pursue a course much resembling typhoid. The patient finally succumbs from mere exhaustion.

TREATMENT. — There is one point in the treatment that should not be neglected — *keeping the child quiet* — rest to the nervous system being essential to complete recovery.

The child should remain in the recumbent position in its crib or bed, with the room darkened, and as little noise as is possible.

We direct that cloths wrung out of cold water, a bladder of pounded ice, or an ice cap be applied to the head (some direct that it be sponged with warm water and fanned), to produce evaporation. We will find quite warm water is very agreeable to the little patient, relieving the excitation of the nervous system, and lessening the temperature.

I do not approve of the use of a cathartic in all cases. Never give a cathartic when the tongue is contracted, reddened around its border and white in the center, or when it is elongated and pointed. In this case it is quite certain to irritate the stomach and upper intestine, increasing the febrile action and the disease of the brain. It may, however, be used with good effect when the tongue is moist, somewhat broad, and tolerably uniformly coated with a yellowish or grayish fur. If the tongue is thus coated, Sodium Sulphite, in doses of two to five grains, may be given every two or three hours, until the tongue cleans.

In the first stage of the disease, we have the patient thoroughly bathed with the alkaline wash, drying with brisk friction; this is followed by a hot mustard foot-bath, continued for half an hour, and both are repeated once or twice daily. Internally, we prescribe: B Aconite gtt. v., Gelsemium gtt. xx., Water $\frac{3}{4}$ iv.; a teaspoonful every half hour or hour. If the fever runs high, with strong, full pulse, we would substitute for the Aconite Veratrum.

These remedies are the sheet anchors in meningitis, as well as in inflammation of the serous membranes elsewhere.

In some cases Rhus is a very important remedy, and replaces the Gelsemium. The indications are usually very

clear: the pulse is sharp, the tissues about the eyes and base of brain contracted, with evident frontal headache, and the tongue shows the red papillæ at its tip.

If the child is wildly delirious, and clutches at its mouth and throat, Stramonium may be given with Veratrum.

Occasionally the patient is so restless and wakeful that remedies are needed to induce sleep. In such cases we administer a few doses of Passiflora, or Chloral Hydrate, should the former not suffice to induce sleep. Hyoscyamus is occasionally added to the sedative mixture, when the delirium is active, there are undue excitement, weakness, and muscular twitchings.

In the *second stage* the condition is wholly changed. Instead of the active circulation and excitement of the brain, we have a stasis of blood and coma.

We prescribe: Aconite gtt. v., Belladonna gtt. x., Water $\frac{3}{4}$ iv.; a teaspoonful every hour. Or if there is fullness of the fontanelles or swollen eyelids, we might add Apocynum gtt. x. to Water $\frac{3}{4}$ iv., and give in teaspoonful doses alternately with the Belladonna.

Ergot is a good remedy in this stage, to relieve congestion and hasten absorption of the exudation resulting from the inflammation.

To alleviate muscular spasm and irritability and restlessness the Potassium Bromide can frequently be advantageously employed. Should the patient pass into a typhoid condition, other remedies, such as Baptisia or Echinacea, will be indicated.

After the patient is on a fair way to recovery, the general condition of the system will need attention, and such remedies as the Syrup of Hypophosphites, Cod-Liver Oil and Iron will be demanded, as well as a nutritious and generous diet. Should any paralysis or contractures result, after all acute symptoms have subsided, n^o and electricity should be employed.

II. TUBERCULAR MENINGITIS.

Tubercular Meningitis, known also as Basilar Meningitis, Acute Hydrocephalus, or Water on the Brain, is a tubercular inflammation of the pia mater, and at times infects the upper portion of the cord also. It is the most frequent as well as the most dreaded form of meningitis met with in children.

ETIOLOGY.—The disease usually occurs in children from six months to four years of age. It is found in weak and feeble children, who have suffered from some antecedent exhaustive disease. In infancy being usually associated with a general pulmonary tuberculosis; in older children, with a tubercular disease of the bones or joints. It also occurs in those who have suffered from chronic intestinal troubles, swelling of the glands and nasal or aural catarrhs. Usually there is a history of hereditary tuberculosis or a possible exposure to infection.

PATHOLOGY.—The changes found upon making an autopsy are surprising for their meagerness and want of uniformity. The chief pathological changes are found at the base of the brain. Some inflammation and its products may be found in the pia at the convexity. At the base the pia is cloudy and the products of inflammation, lymph and pus, with an accumulation of fluid, will be found in the lateral ventricles. In some places there will be bulging from the fluid, especially noticeable in the interpeduncular spaces. In the most acute cases the brain is found congested, slightly softened, and the ventricles distended with fluid. The most fluid will be found in the subacute cases. Miliary tubercles are found in the pia, and at times at the upper portion of the cord.

SYMPTOMS.—At an early age we find the disease commencing as an obscure remittent fever, the languor, or

more properly stupor, being the most prominent symptom. The fever usually has an exacerbation in the afternoon, the child being restless and fretful at this time. Nausea and vomiting are very frequently present.

In older children the first symptoms will be a more or less severe headache, with intellectual stupor, the child being restless and uneasy, and passing bad nights; an obscure fever may be recognized in the after part of the day, the skin being dry and husky, and the pulse frequent and hard. For days, and even for two or three weeks, the symptoms continue in this way, the child being occasionally better for a few hours or sometimes for a day or two. Suddenly the pain in the head becomes intense; the face is pinched and expressive of great suffering; the tongue is red at its tip and edges, dry, and its center covered with a white coat; the bowels constipated, or there is diarrhoea; urine scanty; the pupils dilated, and immobile on exposure to light. The child does not like to be disturbed, is constantly dozing, though its nights are restless. The pulse may be either frequent and sharp, or in some cases slow and feeble. Very frequently there is nausea and vomiting, sometimes very persistent and intractable. In a longer or shorter time the patient becomes almost entirely unconscious, though from the occasional glance of intelligence it is not believed by the parents. Still it is restless and uneasy, turning its head from side to side, putting its hands to its head, and uttering those sharp, piercing cries indicative of pain.

These early symptoms are indicative of cerebral irritation. The headache then becomes more intense. There is rigidity of the muscles of the neck and the head is drawn back. Rigidity of one or more of the extremities may also be present. The pupils are normal or contracted. There is nystagmus; the child is irritable, yet unnaturally drowsy. The pulse slow and respirations irregular and sighing. As

the disease progresses, the stupor increases and the child can not be aroused. The pupils are dilated or unequal and fail to respond to light. There may be strabismus or paralysis of the muscles of the face. The rigidity of the muscles of the neck and back increase, and we may have opisthotonus and muscular twitchings. The fontanelles become tense and bulge. The abdomen is retracted, and tache cerebrale may or may not be demonstrated. The reflexes, at first exaggerated, are now diminished or absent. Soon there is complete coma, muscular relaxation, retention of urine, difficult deglutition, irregular or Cheyne-Stokes respiration; sordes upon the lips and teeth, rapid emaciation; elevated temperature, especially high just prior to death; rapid, feeble pulse, and death, either from exhaustion or in a deep coma.

Convulsions may develop from twelve to twenty-four hours previous to death. The symptoms are irregular throughout the entire course of the disease.

DIAGNOSIS. — There are no positive diagnostic symptoms of the first stage. The distinguishing features are: the obstinate constipation, persistent vomiting, slow pulse, irregular respiration, convulsions, opisthotonus and fever. The diagnostic problem is the differentiation of the various types. We can solve this only by the antecedent history of the parents and child, and the probability of a pre-existing tuberculosis.

PROGNOSIS. — The prognosis of tubercular meningitis is absolutely bad. It is one of the most dreaded and uniformly fatal diseases of early life. It runs an irregular course of from three to six weeks, and if death does not occur in the first stages of the disease, the child eventually succumbs to exhaustion or marasmus.

TREATMENT. — Though so uniformly fatal, an earnest effort is occasionally rewarded with success. Some writers

hint at a possibility of error in diagnosis, when recovery takes place.

The first essential of treatment is absolute quiet in a darkened room. The feeding should be so regulated as to time that the child is disturbed as little as possible. The body should be sponged once or twice daily with hot water, to which Sodium Bicarbonate or Mustard can be profitably added. When the child is very irritable and tosses about, applications should be made to the head, as indicated in acute meningitis.

Remedies should be very carefully selected in these cases. Aconite and Ipecac, in small doses, will sometimes quiet irritation of the stomach and relieve this irritation. Gelsemium may be indicated. Belladonna is called for when dullness and stupor become marked symptoms. Rhus will sometimes prove a most valuable remedy, there being a sharp, frequent pulse, contraction about the eyes and base of the brain, sudden startings in sleep, with shrill cry.

With the relief of irritation of the stomach, and to a certain extent of the brain, Apocynum becomes a prominent remedy, though it must be used in small doses. If indicated, Rhus or Belladonna should be substituted for the Aconite.

If the tongue is pallid and dirty, Sodium Sulphite should be given in doses of two to five grains every three hours. If red and dirty, Sulphurous Acid will be the remedy. If dry and harsh, the child's drink may be acidulated with Muriatic Acid, or it can have small portions of good, sharp cider, or in some cases, of whey. The hot mustard foot-bath will be sufficient in some cases, if thoroughly used, but if the case is severe, we prefer a tub of water as hot as the child can bear it, and rendered stimulant by the addition of mustard or capsicum.

III. CEREBRO-SPINAL MENINGITIS.

When acute meningitis prevails as an epidemic, it is also associated with inflammatory processes in the cord, and is known as Cerebro-Spinal Meningitis, Spotted Fever, Purpuric or Petechial Fever.

It is usually regarded as a specific infectious disease, characterized anatomically by an inflammation of the meninges of the brain and spinal cord. Clinically, its chief characteristics are, its irregular course, moderate febrile movement and profound nervous symptoms.

Epidemic cerebro-spinal meningitis has been recognized and described since the early part of the century. Numerous epidemics have occurred, both in this country and in Europe. It made its first appearance in this country in about 1806 in Massachusetts. Various epidemics have since occurred, and like other infectious diseases, it has become, as it were, naturalized or acclimated in nearly all our larger cities.

It does not spread from one locality to an adjacent one in the same manner as contagious diseases do, but outbreaks occur in sections quite remote from each other. Hence it is not contagious in the ordinary acceptation of that term. The majority of cases seen by the writer occurred without any traceable personal communication. Sporadic cases are frequently seen.

ETIOLOGY.—Acute cerebro-spinal meningitis occurs in all parts of the temperate zone; most frequently in the winter and spring. It attacks both male and female.

Although it is said that three-fourths of the cases occur in children under ten years of age, at times it seems to attack by preference young adults, especially males.

Unhygienic and unfavorable sanitary influences are noted as predisposing causes. No doubt the misery and

squalor attendant upon large tenement houses, with their overcrowded and unhygienic conditions, are prime causes for it becoming epidemic in our large cities.

We have witnessed severe epidemics in well-drained country districts, where these conditions could not possibly exist.

Excessive physical and mental work, lack of sleep, excessive fatigue, mental excitement or depression are all said to be important factors in causing an attack. Recently it is claimed to be a microbe disease, and though efforts have been made to isolate the characteristic micro-organism, they have not as yet been successful. The one most frequently found is the *micrococcus lanceolatis*.

PATHOLOGY.—The disease often begins so abruptly and is so speedily fatal, that the changes found at the autopsy are very slight.

It may be simply a serous exudation and intense hyperæmia of the meninges, with no gross characteristic changes. In other cases of only twenty-four hours' duration the exudation may be purulent.

The characteristic evidences are that of an acute hyperæmia, inflammation and exudation of the meninges of the brain and spinal cord, and as was hinted at before, deaths occurring after the disease is fully developed show a suppurative inflammation of the meninges.

The brain and spinal cord are engorged with blood, the veins and arteries being distended. Minute hemorrhages show on the superficial cortex of the brain, as well as does a well marked cell infiltration.

The ventricles are moderately distended with serum or sero-pus, which may extend down the cord its entire length.

The pia seems to be principally affected, and adhesions may take place between it and the cortex in cases of several weeks' duration.

In other instances an encephalitis ensues, the brain substance is congested, softened, and capillary hemorrhages are found.

The exudation may even follow along the lymph sheaths of the auditory and optic nerves, and pus has been found in the internal ear and inner chambers of the eye. In more chronic cases there is a thickening of the membranes; areas of cortical softening or atrophy, and in some cases hydrocephalus.

In malignant cases hemorrhages in the skin or upon the serous membranes occur.

The lesions found in the other organs are, pneumonia, pleurisy, peritonitis, and acute parenchymatous degeneration of the liver, spleen and kidneys.

SYMPTOMS.—The cases of cerebro-spinal meningitis may be divided into three types, the distinction being quite marked. Occasionally we will find it prevailing in all forms, at the same time, in a locality; but more frequently it will maintain the one form in all the cases, at one place, or during one season. The types may be designated as the rapid, the ordinary and the anomalous.

In the first or malignant form of the disease the prodromal symptoms differ widely in different epidemics, or may be even absent, if the invasion be sudden.

The most frequent symptom attending the commencement of an attack is the violent pain in some part of the head. The patient, if old enough, complains as well of pain in the back and in various parts of the body. The chill is usually well marked, the extremities being cold, the surface of the body shrunken and pallid. If there be vomiting, as there usually is, it is projectile in character. Convulsions may usher in the attack, followed by delirium of short duration, somnolence and stupor, from which the patient never arouses.

In the course of a few hours the chill is succeeded by the febrile reaction. The face becomes flushed, the eyes injected and suffused, the pupils contracted, and the temperature elevated to 102° to 104° F.; though instances are recorded where it has reached a much higher elevation.

The pulse at first only slightly increased, or even subnormal, in twenty-four or thirty-six hours leaps to 120 or 160.

Delirium is soon replaced by a stupor, from which it is difficult to arouse the patient, and though in a stupor, the patient evidences his pain by extreme restlessness and constant moaning.

There is rigidity of the muscles of the neck, which draws the head backward, and when the muscles of the back are involved, opisthotonus is produced. The pupils of the eyes, at first contracted, are now widely dilated or irregular, and either fail to respond to light or do so feebly. In one rapidly fatal case the slightest movement of the patient produced a tremor of the entire muscular system, and the rigidity of the muscular system became so great that no movement of any of the joints was possible. Herpes appear on the lips on the second day, and in rapidly fatal cases ecchymoses and purpuric spots appear previous to death.

In these malignant cases death may occur within the first twenty-four hours. Cases are reported where it occurred within five hours from the onset. The patient may last for two or three days.

2. In the ordinary form of the disease the period of incubation is not definitely known. The premonitory symptoms are, as in the former type, pains in the head and back, with loss of appetite. The usual method of attack is severe headache, vomiting and chill. Reaction comes up slowly, and is not fully established at the end of the first twenty-four hours. The temperature ranges from 101° to 102° F.;

the pulse, at first full and strong, soon becomes rapid and weak. There is a painful stiffness, rigidity and contraction of the muscles of the neck, which is recognized as an early and important symptom. The headache increases, the face is flushed, the eyes become suffused and reddened, there is photophobia, restlessness, and great sensitiveness to noise. The rigidity and contraction of the neck increase, the head is drawn back, and with the involvement of the muscles of the back we have opisthotonus.

The characteristic motor symptoms are, tremor of the muscles, with tonic or clonic spasms of the arms or legs, or both. Clonic spasms are not common excepting in children, and in them are frequently seen at the onset. Tonic spasms we have seen in young adults on several occasions.

These symptoms, although not always present, are characteristic of cerebro-spinal meningitis.

Strabismus is a common and frequent symptom, and is frequently met early in the disease.

Paralysis of the trunk muscles is said to be rare, but of the muscles of the face and eye not at all uncommon.

Choreic movements are sometimes seen. In one instance in a child two months old, in the third week of the disease, the choreic movements involved the muscles of both sides of the body, as well as of the face.

Symptoms of the nervous system, among which headache is the most prominent and persistent from the outset, are pains in the back and neck. Delirium exists almost from the outset. It may be of a wild, maniacal order, or of a low, muttering nature. The delirium, no matter what its nature, is soon succeeded by apathy, somnolence and coma.

The temperature is irregular and variable. Whilst in all cases it is elevated, it presents no regular, typical curve; and forms no guide to the severity of the attack, nor of the prognosis, save only when it is of an unusual height, or

there is a hyperpyrexia. The pulse is usually rapid in children. In adults it is full and strong, and may even be too slow at first, but this is soon replaced by a rapid pulse. We have seen it as high as 160.

The respirations are not materially increased, unless pneumonia exist, which is a frequent complication in some epidemics.

The symptoms pertaining to the digestive system are vomiting, frequent at the onset of the disease; being present in nearly every case seen by the writer. The bowels at the beginning are constipated. The constipation is followed by diarrhoea, and there is at times incontinence of both faeces and urine.

The cutaneous symptoms are varied. Herpes is usually seen upon the lips. It is characteristic of the disease. We have seen a petechial rash covering the entire body. Erythema and purpura are seen at times.

The special senses suffer as well. We have already referred to photophobia and strabismus. In addition to these there may be at times an optic neuritis and atrophy, leading to a permanent blindness. Irido-choroiditis has been known to occur, also resulting in a permanent loss of vision.

Deafness is a frequent complication. There may be a suppurative inflammation of the middle ear, resulting in a rupture of the drum and otorrhoea. The internal ear may be affected, causing vertigo and a permanent loss of hearing. In fact, deaf-mutism is a frequent sequel to cerebro-spinal meningitis.

3. The anomalous or atypical forms present a variety of conditions. In epidemics there may be seen cases in which the characteristic pains in the back of the head and neck, myalgic pains, and other symptoms occur. These quickly subside in a day or two and convalescence is rapid. This type has been styled the "abortive."

There is another form, styled the "intermittent," in which, day after day, the fever continues, sometimes presenting the symptoms of a remittent, at others of a continued fever. There is a gradual increase in its severity, and necessarily an increasing debility of the child. Occasionally the fever will run very high about the sixth to the tenth day, and there will be evident delirium. Passing into the third week, the symptoms assume a typhoid condition, which gradually increases as time passes.

We do not think that at this time there are any distinctive symptoms but the tenderness on pressure over the spine, and the pain when the child is moved, except, possibly, the greater excitement of the nervous system, which in this case replaces the dullness of typhoid. But sooner or later in the disease this excitement is replaced by coma, which sometimes becomes a marked feature in fatal cases.

There is still another form, which may be justly called "chronic," in which the disease, having run the course described for two, three or four weeks, the symptoms gradually give way to treatment; the fever is arrested, secretion established, the child sleeps well at night, takes food and seemingly digests it, but further than this there is no advance to recovery. There is no increase of the strength; indeed, no increase of flesh, and thus week after week will pass by without an appreciable change. After a time, however, it will be noticed that the child is failing, and in five or six weeks it dies—but of what it is impossible to say. I have known of many cases that had a duration of three or four months.

DIAGNOSIS.—The most important symptoms are the abrupt onset, severe pains in the head, neck and back; vomiting, prostration, delirium, coma, hyperæsthesia, convulsions, contraction of the muscles of the back and neck, irregular temperature, and eruptions, especially the herpetic and purpuric.

Cerebro-spinal meningitis is to be distinguished from tubercular meningitis, pneumonia and typhoid fever.

In tubercular meningitis there is usually a tubercular history. It also lacks the abrupt onset, the hyperæsthesia, contraction of the neck and back, myalgic pains and herpetic eruption seen in cerebro-spinal meningitis. In the former the retraction of the abdomen is more marked, as well as is the derangement of the respiration and pulse.

Pneumonia may complicate the disease. When it does occur in sporadic cases, it is difficult to tell which is the prior affection, unless the case be seen early.

Typhoid fever lacks the sudden onset, vomiting and muscular spasm. In both we have fever, delirium, coma and prostration. In typhoid we have mental dullness, a higher fever, pursuing a typical curve; the rose-colored eruption appearing at a definite time, and a disease pursuing a definite course.

PROGNOSIS.—Cerebro-spinal meningitis is justly regarded as one of the most dangerous maladies of childhood. The mortality has been variously estimated at from thirty to seventy-five per cent. The most deaths occur in the first week. We have seen fatal results within less than ten hours from the onset. Even in protracted cases the outlook is not good. In children under five the mortality is large. Among the sequelæ are deaf-mutism (which is probably most frequent), monoplegia and paraplegia (either permanent or temporary), and blindness.

TREATMENT.—We meet with few diseases in which there is greater necessity for kindness and tact in nursing than the one under consideration. The work and skill of the physician may be entirely thwarted by an indiscreet attendant. In the acute stage of the disease great care should be exercised in keeping the patient and the surroundings quiet. There is a remarkable sensitiveness to

noises; consequently quiet should be enjoined, and all sympathizing friends excluded from the sick room.

In the chronic form there is danger of bed-sores. Change of position, frequent bathing and cleanliness are necessary to avoid them. The bladder needs watching, for at times there is retention, and it is necessary to use the catheter. Should there be incontinence and a paralytic condition, it only increases the necessity for care and watchfulness on the part of the nurse.

As with nearly all dangerous diseases, so with the one under consideration, many remedies are recommended, but we are convinced that greater success attends the treatment when based on special indications as presented by each individual case.

We have seen cases improved by emetics. We prefer Lobelia. The indications are: the broad, full, dirty tongue, the coat being especially thick at the base. There is nausea, and evidences of an accumulation of undigested food in the stomach. The emetic not only empties the stomach, but produces relaxation, retards convulsive action, and paves the way for our other remedies. The same holds true with cathartics. We all recognize the salutary effect of them upon all convulsive conditions. Frequently there is constipation early in the disease. A cathartic will remove morbid conditions of the intestinal canal and impress by their action the entire system.

As regards other remedies, there are possibly no two as often indicated as Gelsemium and Belladonna. Gelsemium is called for early in the disease. The face is flushed, eyes bright and pupils contracted. There is great restlessness, elevated temperature and irritation and determination of blood to the brain, and possibly convulsions. Belladonna in the opposite cases. We have dullness and hebetude, patient sleeps with eyes partially closed, tissues are sodden, and the whole system is in an atonic condition.

From five to ten drops of Belladonna, added to half a glass of water and given every half hour or hour, according to the severity of the case, will remove the congestion and leave the system in better condition for the action of other remedies.

With these we combine the special sedatives when indicated by the elevated temperature and pulse: Aconite, when the pulse is small, frequent and easily compressed; Veratrum, with the full, bounding pulse, with tissues engorged, and full capillaries. Veratrum is especially recommended in fairly large doses, owing to its power of producing dilatation of the blood-vessels throughout the body, and thus relieving the congested area of its excess of blood.

Bromides, especially of Potassium, have been used for some time. Their best effects are noted to allay the twitchings or muscular spasms when the nervous disorders of the affection become marked. Its direct indications are nervous excitement, nervous paroxysms from irritation, exalted nerve action.

Cannabis Ind., indicated by severe pain in the back of the head, stupor, vertigo, feeble and irregular pulse. It is used with varying success early in the disease.

Ergot seems to be a great favorite with nearly all physicians. It is indicated by an extreme fullness of the circulation of the brain, flushed face, headache, great restlessness. We believe it to be a good remedy for congestion. Its effect is not so favorable in the early stage as it is later, when exudation has taken place.

Jaborandi, when given early, has been used with good results. It is indicated by the dry, hot skin; dry, parched mouth; pulse full and strong; kidneys inactive, and patient restless and uneasy; convulsions.

Physostigma is recommended when the pupils are contracted, surface cool, the limbs cold, and the pulse weak

and tremulous; dullness of intellect, associated with contracted pupils and a small, feeble pulse.

Rhus Tox., when there is marked cerebral irritation, with excited circulation, frontal pain, prominence and redness of the papillæ and tip of the tongue.

In the anomalous forms of the disease, especially in the intermittent and chronic, the indications frequently call for another class of remedies. Thus, Hydrochloric Acid, with deep redness of mucous membranes, slick tongue, and typhoid symptoms; Baptisia, with the purplish tongue, moist, pasty fur, offensive breath; Echinacea, when there are symptoms of sepsis, the throat is dark and full, tongue full, with dirty, dark-brown or black coat; Sodium Sulphite, if there is a large pulse, tongue broad, with dirty coat, sweetish taste in the mouth, pallor of the mucous membranes.

Locally we have used the ice bag to the head for its local and antipyretic effects. The general sponge bath, using hot soda water, two or three times a day, has allayed the nervous excitement remarkably. Stimulating or irritating applications to the spine are said to be beneficial.

Convalescence is usually slow and tedious, and requires care and a good generous diet. Tonics or supportive remedies are needed to conserve the strength. Owing to the exhaustion nearly always present, alcoholic stimulants are usually required. Should paraplegia or monoplegia be present after all acute symptoms have subsided, electricity and massage should be judiciously and cautiously used.

HYDROCEPHALUS.

Hydrocephalus is an excessive accumulation of serous fluid within the cranium. If the accumulation be between the dura mater and the pia mater, it is termed external hydrocephalus; if within the ventricles of the brain, internal hydrocephalus.

The disease is also divided into the acute and chronic forms, and again into congenital and acquired. The chronic form is the more important, and the one to be considered at this time. Whatever can be said of the acute form has been already said, when speaking of tubercular or basilar meningitis, as it is the result of and secondary to it. Chronic congenital hydrocephalus is the important variety, and the one usually understood when speaking of hydrocephalus.

Etiology. — It occurs both as a primary and secondary disease. When secondary, it is associated with tumors of the brain or basilar meningitis. The primary form is almost exclusively a disease of childhood, and occurs most frequently before the third year. It is difficult to determine the causes that give rise to the effusion of water, but as it occurs almost invariably in children of feeble vitality, and in families whose children die during infancy of acute hydrocephalus, we are led to believe that it depends upon hereditary debility. The factors chiefly held as responsible are syphilis in the parents, alcoholism, tuberculosis; emotional excitement of the mother during pregnancy, or actual injuries to her. Still, we have found it in children of healthy parents after and subsequent to normal pregnancies.

Pathology. — The disease may be in an advanced stage or but moderately developed at birth. In the more marked forms of the disease, the ventricles are widely distended and filled with a clear serum. The distention may be so great that the brain tissue is crowded up into a thin layer or entirely destroyed. The convolutions are unfolded and almost obliterated. The bones of the cranium will be found thin and transparent, and occasionally separated from each other by very considerable intervals. The brain tissue is soft and anaemic.

SYMPTOMS.—The disease is recognized by the increased size of the head. If it is present at birth, the fluid usually increases for the first few days, or as long as the child lives. In rare instances the accumulation ceases, and a fair or normal mental development follows. The fluid accumulates within the lateral ventricles, both in the anterior and posterior horns, as well as in the aqueduct of Sylvius. The brain is compressed by the fluid, and becomes thinned, whilst the membranes usually remain normal. As a consequence of the distention, bulging and pulsating of the fontanelles are seen. The shape of the skull is also modified as a consequence of this excess of fluid. The bones become thinned and yield to this increased pressure, and the skull becomes distended in all directions, the sutures becoming widely separated. The most prominent bulging is usually seen in the frontal and occipital bones. Should the child survive, symptoms arise which point to a deficient cerebral development. Owing to the increased size of the head, the child is rarely able to hold it up unsupported. If it sits in a chair, the head inclines to one side, or rests upon the chest. There may be a general flaccid condition of all its muscles, due to a slight paresis; but more often there are spastic contractions or a rigidity, most marked in the legs. Nystagmus and convergent strabismus are often present, and convulsive seizures, amounting to a chronic epilepsy, add to the burdens of the child. The mental development is seriously interfered with, and ranges from imbecility to total idiocy.

DIAGNOSIS.—In very young children, and sometimes up to the age of three years, there will be found a perceptible enlargement and distention of the fontanelles, and separation of the sutures, and the entire head is abnormally large. The growth of the head is noted by careful

measurement. This, with the associated want of mental development, completes the diagnosis.

PROGNOSIS.—The prognosis is usually unfavorable, though some cases may be cured, and in others life may be prolonged for a considerable period. Yet the child, so far as our own experience extends, goes through life with its intellectual powers seriously impaired. The prospect of any improvement in its mental condition is exceedingly slight.

TREATMENT.—We are satisfied that the greatest success in the treatment of hydrocephalus will follow the use of specific remedies. The remedy we prefer in this case is the Apocynum Cannabinum. Pilocarpus and Potassium Iodide have also been recommended, with the hope of producing an absorption of the fluid. The former should be used with caution, as it is exceedingly depressing; the latter when we are satisfied the condition is complicated with or the result of syphilis.

As a tonic, some of the preparations of Hydrastis answer the best purpose, and when there is constipation of the bowels, may be given with Podophyllin in small doses; the combination of these remedies heretofore given may be employed. The Collinsonia Canadensis is a favorite remedy in our practice, especially in cases where there is irritation of the nervous system, and we may associate with it the Ptelea, Cornus, Euonymus, or other remedies of this class.

Surgical methods, such as puncture through the fontanelles, lumbar puncture, bandaging and strapping of the head, have been advocated. Their success thus far has not been such as to commend them as curative measures.

INFANTILE CEREBRAL PARALYSIS.

Infantile cerebral paralysis, known also as spastic diplegia, paraplegia or hemiplegia, has, for convenience of

description, been divided into three groups, the division being based upon the time and origin of the lesion. They are: intra-uterine, or those occurring prior to birth; those occurring during labor, or at birth, and those developing subsequent to birth. No matter what the time and origin of the lesion, all cases of cerebral paralysis are similar in many respects in their clinical features.

Etiology.—The causes of the prenatal type are rather obscure. Hereditary taints, such as neurotic tendencies, epilepsy and insanity, are given as causes. The role played by these taints is rather vague and indefinite. Cases have been traced to injuries and an exhausting illness of the mother during pregnancy.

The second variety, or birth palsies, is due to injuries received during labor, and it is claimed that more cases result from tedious labor than from instrumental delivery.

The causes of the third or acute variety are obscure. It is said to follow many of the acute infectious diseases, as measles, scarlatina, diphtheria, variola, and especially pertussis. In the latter case it is said to be due to a mechanical injury received during a spasm of coughing. Simple or cerebro-spinal meningitis and an exhausting gastro-enteritis are said to be etiological factors; and in many cases no cause can be assigned.

Pathology.—In the paralysis of intra-uterine origin, quite large cerebral defects are found. One-half or more of an entire hemisphere may be wanting, the defective portion consisting of a cyst. There is also defective development of the cellular elements of the cortical and pyramidal cells. These congenital defects may be due to an arrested development, or to an intra-uterine lesion, as a hemorrhage or thrombosis.

In those cases occurring at birth, the cause in nearly all cases is a meningeal hemorrhage, more or less diffuse. The secondary lesion will depend upon the extent and the

location and the time that has elapsed since the primary lesion. It may be a meningo-encephalitis, an atrophy and sclerosis of the cortex. Cysts may develop upon the surface, or there may be a secondary degeneration involving the spinal cord. This latter condition is usually found in connection with atrophy and sclerosis.

In the third variety there is a hemorrhage, embolism or thrombosis as the primary lesion. There is, consequently, present some disease of the heart, rheumatism, scarlatina or pneumonia, which diseases predispose to an embolism. A thrombosis occurring in children is usually due to marasmus. Whatever may be the initial lesion, the secondary changes are cysts, softening, atrophy and sclerosis.

SYMPTOMS. — Whatever the type and origin, nearly all cases of cerebral paralysis are similar in many respects. The disease is seen most frequently in the earlier years of life, from birth up to the age of ten, or even later, the majority of cases being seen during the first three years. The paralysis is of the spastic order, and in distribution is hemiplegic, diplegic or paraplegic. In most cases due to an intra-uterine lesion, loss of power is the one prominent symptom. It is nearly always diplegic or paraplegic. In some cases there is a general flaccidity of the muscles, instead of the rigidity so characteristic of cerebral palsies. In connection with the paralysis, some mental impairment, varying in degree, is nearly always present.

The type of the secondary variety depends upon the extent and position of the lesion. It may be hemiplegic, diplegic or paraplegic. In the severe cases, that survive the early days of life, there remains some rigidity of the extremities, usually the legs. Spasms of the neck and trunk occur, which cause at times an opisthotonus. Convulsions, which, from their frequent repetition, are equivalent to an epilepsy, may occur. The physical development is interfered with, and the child usually succumbs to some

acute disease during infancy. Should it survive, there is always left some degree of mental impairment. Talking is delayed and imperfect. It does not walk until four or five years old, and then only imperfectly. The thighs are strongly adducted, at times sufficiently so as to cross. The reflexes are exaggerated, and there are abnormal muscular movements of an irregular choreic or athetoid type.

In the third or acquired type, the paralysis is usually hemiplegic, although diplegia and paraplegia are occasionally seen. It may occur at any time after birth, usually, however, before the fifth year. The onset is sudden, repeated convulsions, followed in the severe cases by coma, being the initial symptoms. The frequent repetition of these convulsions is equivalent to an epilepsy, and their continuance throughout life is responsible, in a measure, for the deficient mental development witnessed in these cases. This deficient mental development ranges from weak-mindedness to idiocy. Fever may be present in the initial stage, as may also vomiting, delirium and other symptoms suggestive of an acute inflammatory process in the brain or its meninges.

The paralysis of motion is complete, whilst the disturbances of sensation are transient. In a few days some improvement in motion is noticed, which improvement may be quite rapid, especially so in the legs, and walking may become possible, though a dragging of the affected leg is noticeable. Contractures finally develop, and may be sufficient in the legs as to cause talipes. Atrophy is slight, not being near so marked as in paralysis due to a spinal lesion. There is more or less rigidity and disturbance of motion; athetoid or choreiform in character, which are all grouped under one head — post-paralytic. Aphasia is occasionally seen, and the electrical reactions are not changed.

DIAGNOSIS.—The task is to differentiate between a

paralysis due to a spinal lesion and that due to a cerebral cause. This is not always an easy task. The distinguishing features of a palsy of cerebral origin are: the paralysis is usually hemiplegic or diplegic; there is spastic rigidity and contractures, an increase of the reflexes; atrophy is slight, and there are no changes in the electrical reaction. There is also defect in mental development, and occasionally epileptic attacks.

PROGNOSIS. — In the congenital form of this disease, the child usually succumbs, at an early period in life, from some intercurrent disease. If it survives, it is usually deficient mentally as well as bodily, epilepsy also being frequently present. In the third type there is an uncertainty for some time regarding the outcome of the paralysis and the mental condition. Several weeks, and possibly several months, must elapse before any definite conclusion as to the outcome can be reached.

TREATMENT. — The treatment is not very satisfactory, and is necessarily prolonged. Quiet and attention to the nutrition are of first importance. In those cases of the first and second group, or those occurring at birth, it may be necessary to feed the child artificially. If this be the case, cow's milk properly prepared is the best diet. Should convulsions be present, they should be treated as previously outlined.

In the third group the cases should be treated in the same manner as apoplexy in the adult. Rest and cold cloths to the head should be used as in meningitis. We look to the nerve centers for the wrong, which may be the cause of paralysis, and here we will be guided by the special indications for remedies. *Nux Vomica* will frequently be indicated, there being evidences of an enfeebled circulation. With flushed face and contracted pupils, the patient will have *Gelsemium*, usually with one of the seda-

tives. If the patient is dull and inclined to sleep, Belladonna will be given; and with sluggish muscular action, Ergot. Rhus is indicated by the sharp pulse, frontal headache, and red papillæ of tongue; Bryonia by the corded pulse and flushed right cheek; Marcotys by muscular pain and soreness. After the active period has passed benefit is derived from the moderate use of electricity. We believe the faradic current to possess the most active curative properties.

Inunction with Quinine has been of marked benefit in these cases; even friction with a fatty matter is of advantage. Brisk friction to the spine and the part affected, with salt and water, using the open hand, is good.

The child should be taken into the open air, and have an abundant supply of sunlight where it passes most of its time. It should also be instructed to call the paralyzed parts into action as much as possible, and control their movements. Practice in this direction is often attended with the happiest results. Education may accomplish much in the way of improvement for the mental deficiency. The deformities and contractures are improved and relieved by the application of orthopœdic appliances and the surgeon's aid.

ACUTE MYELITIS.

Acute myelitis is an inflammation of the spinal cord. It is divided, according to its mode of onset, into acute, subacute and chronic myelitis. According to its origin, it is again divided into idiopathic, tubercular and syphilitic. Some writers doubt if it is ever idiopathic, stating their belief that it arises from some traumatism or infectious disease, though we may not be able to trace its cause.

ETIOLOGY.—Myelitis is usually the result of an injury, or a complication of some infectious disease, especially typhoid, scarlatina or diphtheria. It is also said to be the

result of exposure and cold. In one of our own cases it was certainly the result of toxæmia.

PATHOLOGY.—The spinal cord seems to be peculiarly liable to inflammation, especially in the dorsal portion. The membranes surrounding the cord are hyperæmic, and the cord itself congested and swollen. Owing to the congestion, the distinction between the white and gray matter is not well marked. The cord is abnormally soft, and minute hemorrhages are visible. Examined microscopically, the evidences of inflammation, such as dilated blood-vessels and the exudation of leucocytes, are visible. Changes are also noted in the nerve cells, which are swollen, granular and degenerated.

SYMPTOMS.—The clinical features of myelitis will vary according to the site and intensity of the inflammation, as well as the amount of the cord involved. The disease may begin gradually, but it is usually sudden in its onset, and characterized by fever, pain, prostration, and localized or general convulsions. In all cases of transverse myelitis there is loss of motion and sensation below the level of the lesion; the reflexes are disturbed, and the functions of the bladder and rectum deranged. At the level of the lesion there is hyperæsthesia and girdle pains. The form of paralysis arising from myelitis is naturally a paraplegia. If the lesion be in the cervical region, the upper extremities are paralyzed and flaccid, whilst the paralysis of the lower extremities is spastic. There is anæsthesia of the four extremities and of the trunk to the level of the lesion. The pupils are frequently contracted, and there may be an optic neuritis. There is constipation and retention of urine, followed by incontinence. When in the cervical region, there is great danger to life, owing to a possible paralysis of the respiratory muscles and diaphragm.

In most cases it is the dorsal region which is affected.

The symptoms are then as outlined above, save that the arms, pupils and respiratory muscles escape. When the lumbar portion of the cord is the seat of the lesion, the paralysis is restricted to the lower extremities, and will be of the flaccid character, with more or less atrophy. Sensation is impaired at an early period in all cases of myelitis. If the lesion be of traumatic origin, the loss of power and sensation is simultaneous. Anæsthesia exists in all parts below the seat of the spinal lesion, and all forms of sensation, such as that of touch, heat, cold or pain, are equally involved. At the upper limit of the anæsthetic area there usually exists a small hyperæsthetic area, and above this sensation is normal. In other cases, instead of the hyperæsthetic area, there may exist a sensation as though a girdle encircled the body.

The reflexes assist some in the determination of the portion of the cord involved. When the lesion is in the cervical region, the reflexes of the upper extremities are destroyed, whilst those of the lower are exaggerated. If in the dorsal region, the reflexes of the parts supplied by the nerves connected with the segments in which the lesion exists are lost; those below increased. If the seat of the disease is in the lumbar region, the knee jerk and ankle clonus are lost. The same conditions prevail in the electrical reactions. The reaction of degeneration is found in the parts supplied by the nerves given off from the diseased segments. These facts assist in the location of the seat of the disease.

In all cases of myelitis, the vesical and rectal reflexes are disturbed or destroyed. The result is the retention of urine, with a subsequent dribbling; and either a constipation or involuntary passages. Priapism is not infrequent in children. Involuntary, spasmodic muscular twitchings are witnessed in nearly all cases. Trophic disturbances are very frequent, and always to be feared.

There are contractures and atrophy, and bed-sores are easily developed upon any portion of the body subject to pressure. The constant dribbling of the urine increases the danger of their formation.

DIAGNOSIS.—The acute onset, sudden loss of power and sensation with their permanency, the retention or involuntary discharge of urine and faeces, the flaccidity and atrophy of the parts affected, in connection with the spastic symptoms below, are the characteristic features upon which we base our diagnosis. In connection with these facts, we take into consideration the etiological factors. The distinction between a spinal meningitis and myelitis is of little practical value. A meningitis without an involvement of the cord is said to be a rare exception, save only in cerebro-spinal meningitis.

PROGNOSIS.—The prognosis will vary with the seat of the lesion. When it is the cervical region, there is danger to life, owing to the involvement of the respiratory muscles. The danger is also increased by reason of the complications of bed-sores and a secondary involvement of the kidneys. The danger of these complications is increased in toxic and specific cases. Complete recovery is very rare.

TREATMENT.—In the acute stage of the disease, complete rest, with cold applications to the spine, is one of the first essentials. Some advise counter-irritants and the cautery. We never could see any advantage to be derived from them. Bed-sores are usually to be contended with, and there can be no advantage in assisting in their formation. The diet should be mild, yet as nourishing as possible. The constipation must be relieved, and the urine drawn by the catheter. When the dribbling of urine begins, urinals should be worn by the patient and every care exercised to keep the bed and the patient clean. The

constant wetting adds to the discomfort and to the danger of the formation of bed-sores. When these sores do form, a dry dusting powder, such as Bismuth Subnitrate or Aristol, should be used; the sore covered with a light dressing over which a piece of oiled silk is applied. Frequent changing of the patient's position and a constant care of the bed delay their formation and assist materially in the healing. When the skin becomes reddened and shows the evidence of pressure, we have found it advantageous to use a wash of Plumbi Acetus and Alcohol.

After the acute symptoms have subsided, massage and electricity are indicated. They tend to stimulate regeneration and growth in the paralyzed and atrophied limbs. In combination with them, systematic bathing and abundance of fresh air are necessary and helpful.

The internal remedies are selected with the same care as shown in other diseases. In some cases Aconite or Veratrum, with Gelsemium, will be the remedy; and as the pulse and temperature come down, we find the symptoms of irritation reduced. In other cases the indications for Rhus will be marked, and it will be associated with Aconite. Bryonia is indicated by the steady pain in the spine, with possibly a flushing of the right cheek. Macrotys will be indicated by muscular pain, as in other cases; Sticta by the pain in shoulders and neck to the occiput; Phytolacca by soreness of the mouth and throat, and fullness of cervical glands. Lithium Bromide is useful by reason of its action upon the kidneys, as well as upon the nervous system. It should be well diluted with water. Ergot is indicated by dullness, languor and congestion. It is claimed to hasten absorption of the products of inflammation. Potassium Iodide is highly extolled in this disease. We are guided in its use by the ordinary indications of the leaden-colored tongue, blue line on gums, enlarged lymphatics and syphilitic taint.

In some cases, the attack being sudden and severe, and the patient suffering from nausea or disgust for food, drink, or medicine, we find a full, dirty tongue, and conclude that the treatment had best be commenced with an emetic. With a broad, pallid and dirty tongue, Sodium Sulphite will be indicated in the usual doses. If the tongue is red and covered with a glutinous yellow coat, Sulphurous Acid is the remedy. When the face is full and purplish, like one who has been exposed to severe cold, Baptisia is given.

As the inflammation passes away, the child may have some of the simple bitters, Quinine inunctions, the Hypophosphites, Cod-Liver Oil, or some of the preparations of Malt.

INFANTILE SPINAL PARALYSIS.

Infantile spinal paralysis, acute anterior poliomyelitis, acute atrophic paralysis, is the most frequent and the essential paralysis of childhood.

Etiology.— Considerable doubt exists as to the causes of this disease. The greater proportion of cases occur before the fifth year, and by far the larger percentage in the third. Most cases are said to occur in boys, and also in warm weather. Infection, traumatism and cold are said to be etiological factors in its production. So far as our own experience is concerned, no essential cause could be discovered in the majority of cases.

Pathology.— Poliomyelitis is an acute inflammation of the gray matter of the anterior portion of the cord. The early changes in the cord are not so well understood as are the secondary ones, owing to the meager opportunities afforded for examining the cord in the acute stage. The secondary changes consist in the shrinking of the cord at the seat of the lesion, especially in the half of the cord involved. The larger ganglion cells are few in number,

and those that are visible are shrunken and altered in appearance. Both the gray and the white matter on the side involved are shrunken, and the anterior nerve roots are smaller and degenerated. The paralyzed muscles atrophy; the muscular fibers diminish in size and degenerate; many of the muscular fibers, disappearing entirely, are replaced by adipose tissue. The affected limb thus frequently becomes much smaller than the sound one. The lumbar region of the cord is the portion most frequently involved.

SYMPTOMS. — The onset is acute, the disease beginning as an acute infectious disease, with fever, vomiting, pains in the limbs, and occasionally even convulsions, delirium or coma. These symptoms last for a few days, when they subside and the paralysis is discovered. The acute symptoms may be so severe as to so engross the attention of the physician and nurse that the paralysis is at first overlooked. In two of our own cases the onset was characterized by fever, vomiting, diarrhoea, and a general hyperæsthesia, which lasted for twenty-four hours before the paralysis was discovered. In many cases the child goes to bed well, is restless and uneasy during the night, and wakes up in the morning paralyzed.

The paralysis is at first widely spread, improvement is quite rapid, and it is soon recognized as being confined to one part, which part remains permanently impaired. In addition to the paralysis, which is of the flaccid order, a rapid atrophy of the paralyzed muscles ensues. There is also an arrested growth of the entire limb; hence it is shorter than its fellow. The atrophied muscles or limb fail to respond to the faradic current, and the nerves to the galvanic, the muscle responding only sluggishly, if at all, to the galvanic. The reflexes are diminished, but the sphincters are not involved. In half the cases the lower limbs are the parts involved. In our own experi-

ence in all our cases only one leg remained permanently impaired.

DIAGNOSIS.—The paralysis is to be distinguished from that of the cerebral type and from myelitis. There is nothing characteristic in the general symptoms. The distinguishing features of this type of paralysis are: the acute onset, rapid wasting, absence of sensory symptoms, and partly spontaneous recovery. In the paralysis of the cerebral type, the paresis is hemiplegic or diplegic. It is spastic in character; there are contractures, exaggerated reflexes, and but little, if any, atrophy. In myelitis, the paralysis is paraplegic. There are also anaesthesia, exaggerated reflexes, involvement of the sphincters, tendency to the formation of bed-sores, with but slight atrophy or wasting.

PROGNOSIS.—There is but little danger so far as life is concerned; neither are the mental powers impaired. The important consideration is the amount of permanent paralysis and atrophy. If the wasted muscles respond to the faradic current, there is some indication of a return to usefulness. Those that fail to respond, or lose their contractility, will usually remain permanently impaired.

TREATMENT.—The treatment of the acute stage will consist in the treatment of the general condition. Rest, quiet and local applications to the spine, when the condition is recognized, constitute the principal requirements. Hot baths will usually allay restlessness and induce sleep. We usually use hot Soda Water, and generally bathe the entire length of the spine. Internally, Aconite or Veratrum is given, when there is elevated temperature and pulse; Gelsemium, Belladonna or Rhus Tox., when there is irritation of the nervous system, choosing each according to the indication.

After the acute symptoms have subsided, massage and

friction, in connection with the faradic current, should be employed. The object of these measures is to maintain the nutrition of the muscles. If the muscles fail to respond to the faradic current, the galvanic should be substituted, using the former again as soon as the electrical response can be obtained.

Internally, Strychnine, Syr. Lactophosphate Lime, or other tonics should be given.

Mechanical measures properly applied frequently assist in the prevention of deformity, or, with the assistance of tenotomies, in the overcoming of such when present. They are sometimes an aid in locomotion.

MULTIPLE NEURITIS.

Multiple neuritis is a disease in which several or many nerves of the body are involved in an inflammatory process. Its tendency is to a symmetrical development. The disease is not so common in children as in adults, as the causes which tend to its development do not exert so powerful an influence in childhood, save only diphtheria.

ETIOLOGY. — The causes of multiple neuritis in children are the acute infectious diseases, especially diphtheria. Occasionally it results from malaria, typhoid fever, scarlatina or measles. It is caused by the metallic poisons, as lead, arsenic, mercury or phosphorus; also by alcohol. These causes are rare in children. Exposure to cold will occasionally produce it.

PATHOLOGY. — Any nerve may be affected, and the distribution of the paralysis will vary with the course of the nerves involved in the inflammatory process. The nerves are usually symmetrically affected. The inflammatory changes are both parenchymatous and interstitial. The nerve is red and swollen, and its sheath hyperæmic. There is oedema or sero-fibrinous exudation. There is also an

exudation of cells between the sheath and the nerve, and even between the nerve elements.

SYMPTOMS. — The symptoms of multiple neuritis are practically the same, no matter what the cause may be. The onset is gradual, and the disease does not reach its height until from two to four weeks have elapsed. The characteristic symptoms are the motor and sensory paralyses, the distribution of which is symmetrical. The primary symptom is a general weakness of the muscles, which slowly increases until the paralysis is complete. As the extensors are the muscles most apt to be affected, we have both wrist and foot drop. The paralysis is of the flaccid order, with atrophy of the affected muscles. The electrical reaction is altered in every possible form, varying from a slight diminution of the faradic irritability to an absolute loss of the galvanic response in both muscle and nerve. Persistent sharp and neuralgic pain along the course of the affected nerves, with tenderness on pressure, is frequently present in multiple neuritis; and before paralysis becomes absolute there is at times tremor of the parts and an incoordination of movements, associated with a loss of power and sensation. The patient stands or walks imperfectly, and the reflexes are diminished or lost. Every form of sensation, such as touch, pain, temperature and muscular sense, is equally impaired. Atrophy is a prominent and early symptom. The bladder and rectum are not involved.

Multiple neuritis resulting from diphtheria, on account of its frequency, merits separate consideration. It differs from the other form mainly in the order in which the various parts become involved. In this case the throat is the part first paralyzed, whereas ordinarily it is the extremities. In diphtheria, the neuritis may begin in the first or third week of the disease, or even later. The palate becomes paralyzed, as evidenced by the nasal voice

and regurgitation of fluids through the nose. This condition is quite common, and may take place in cases of diphtheria so mild that the throat affection escapes detection. The muscles of the pharynx may be paralyzed, rendering deglutition difficult or impossible. The larynx may also be involved. The muscles of the trunk and neck may be paralyzed, so that the child is unable to hold up the head, or even to sit erect. The respiratory and the cardiac muscles are at times paralyzed; in such cases respiration is irregular and labored; there is dyspnoea. The heart's action is disturbed, and the pulse is irregular and rapid. We have seen cases in which the respiratory muscles were paralyzed; others again in which death resulted suddenly and unexpectedly from paralysis of the heart. In one of our cases, not only were the muscles of the trunk and neck paralyzed, but the limbs were also affected, so that the boy was compelled to remain prone in bed. Fortunately, the cardiac and respiratory muscles escaped.

The course of the disease is progressive for three or four weeks, when improvement begins. At times it is rapid; in other cases it is slow. It usually ends in a complete recovery.

DIAGNOSIS. — The chief characteristics of multiple neuritis are the motor and sensory symptoms, involving the same nerve areas, and their widespread, symmetrical distribution. The atrophy, diminished electrical reaction, pain and gradual onset are also characteristic.

PROGNOSIS. — The prognosis is usually good. Death may result from paralysis of the heart or of the respiratory muscles. It may also result from the entrance of food or of a foreign body into the air passages, when the pharynx or larynx is paralyzed. Though there may be considerable atrophy, if there be any response to the electrical current, recovery is usually complete.

TREATMENT.—The treatment will vary with the cause. If this can be ascertained, it should be removed, if possible, by appropriate treatment.

For the pain in the early stage, hot applications or prolonged hot baths are beneficial. The hot application may take the form of the hot-water bottle or salt sack, or even hot flats.

The pain may be so intense that such remedies as Bryonia, Rhus Tox., Hyoscyamus, or even Chloral, may be called for. Should there be insomnia and restlessness, Cannabis or Passiflora will be needed.

After the acute stage has passed, electricity and massage are needed. If the muscles respond to the faradic current, it should be used. If there be no response to it, the galvanic should be used. In addition to the systematic use of the electric current and massage, such remedies as Nux or Strychnine, Iron, Quinine, Cod-Liver Oil, the Comp. Syr. of Phosphates or Hypophosphites are needed.

CURVATURES OF THE SPINE.

Two varieties of curvature are met with, lateral and posterior, both occurring most frequently in the dorsal region, though at last always compensated by curvature of the lumbar and cervical portions.

ETIOLOGY.—Curvature of the spine occurs most generally in the young, and is rare after the age of twenty-five. In all cases it is the result of enfeebled vitality, either congenital or induced by destitution, over mental exertion, or faulty positions when at labor. In some cases this manifests itself in the form of tuberculosis, and in such case we may expect disease of the bones.

Lateral curvature, or scoliosis, may be dependent upon affections of the muscles, as hypertrophy, atrophy, spasmodic contraction or inflammation; upon general debility,

the body not being sufficiently strong to support itself in the erect position; upon obliquity of the pelvis, the result of injury or disease of the lower extremities, of faulty positions; upon altered capacity of one side of the chest from disease, as empyema, upon rachitis or softening of the bones, or defective development of the vertebrae.

Posterior curvature, or Potts' disease, is a chronic inflammation of the bodies of the vertebrae; tubercular in type. Traumatism is claimed to be the principal exciting cause, though it is said to have followed the exanthematous diseases of childhood.

PATHOLOGY. — In lateral curvature the changes are due to the misdirected power exerted on the structures which support the thorax and body upright. The bones yield under the weakened support and produce a curvature. The superimposed weight adds to this tendency to torsion and produces changes in the shape of the bones. Secondary curvatures compensatory in nature are usually developed. As a result of the curvature, displacement and compression of the thoracic and abdominal organs result.

Potts' disease of the spine begins in the central portion of the body of the vertebra and extends to the periosteum, ligaments, cartilage and all the structures. The vertebrae soften and fall together, and by reason of the superimposed weight, displacement of the spinous process takes place and produces the deformity known as "kyphoses." The cord and nerves are also affected by the inflammation and inflammatory deposits, and also from pressure, producing the group of symptoms known as "Compression Myelitis, or Potts' Paralysis."

SYMPOTMS. — The symptoms of curvature of the spine vary greatly in different cases, in some being very marked, and in others obscure. Usually the child's health is noticed to be feeble, its appetite variable, and digestion and assimilation imperfect. It may or may not complain of pain

in the back, but it will be noticed that the back is weak, and that it makes unusual efforts to rest it.

Lateral curvature usually develops so gradually that it at first escapes notice, until it has existed for some time, and it is then probably only accidentally discovered. The most prominent symptoms are, a prominence of the scapula and shoulders upon one side, and a shortening of the distance between the axilla and hip and a consequent prominence of the opposite hip. An examination of the back reveals the curvature of the spine and the consequent twisting of the body. In some cases there is a disturbance of the functions of the internal organs, such as shortness of breath, palpitation of the heart, impaired appetite and indigestion. Frequently there is no complaint except from the weakness of the back.

The symptoms of Potts' Disease present a wide variation. The onset is usually gradual, and may be overlooked or misinterpreted until the disease is fully developed. The symptoms will vary with the location of the lesion. Among the early symptoms is pain, caused by irritation of the nerve roots, and referred to various portions of the body. These pains indicate the presence of a pachymeningitis, and with them there is usually associated muscular weakness of the lower extremities or arms. Occasionally pressure paralysis is among the first symptoms. Among the early symptoms is a rigidity of the spine, due to muscular spasm. This rigidity or stiffness causes the patients to assume characteristic attitudes, the position varying in accordance with the location of the disease. When the disease is in the lumbar region, psoas abscesses sometimes result.

Constitutional disturbances are profound. Children are retarded in their growth and dwarfed in stature. They are usually fretful and capricious in disposition. They are quite delicate and predisposed to attacks of pneumonia.

The extremities seem unusually long and the head large. A permanent deformity is always the result.

DIAGNOSIS. — An examination of the spine will determine the existence of curvature, and it is usually not difficult to determine which is the primary and which is the curvature of compensation. The examination should be made in a good light, the clothing being removed as far as the hips.

PROGNOSIS. — In lateral curvature a favorable prognosis may be given in many cases, the deformity being nearly entirely removed, or it may be simply arrested, the body so accommodating itself to it as to give rise to but little subsequent trouble. In posterior curvature the best result usually obtainable is the stoppage of the disease and the prevention of further curvature. It is true that in some cases we may partially correct the deformity. If there has been destruction of the bodies of the vertebra, the best result is ankylosis of the bones and of course permanence of the curvature.

TREATMENT. — Attention to the general health is one of the most important points in the treatment in all forms of spinal curvature. Those bitter tonics that improve the tone of the stomach, and give the patient a good appetite and power of digestion, are applicable. If there is disease of the bones assuming the form of softening, Phosphoric Acid has been recommended. We would commence its administration in doses of two drops of the dilute acid, four or five times a day, and increase it if deemed best. Sodium Phosphate may be given with the food in such quantities as will keep the bowels open. Lime Water is sometimes useful, and children will improve when it is added to their milk. Even Common Salt becomes an important remedy when children have not had it in sufficient quantity (bottle babies), and added to their milk

there is a decided improvement. Hypophosphite of Lime, the Compound Syrup of the Hypophosphites, and some of the Phosphates, may also be thought of. Occasionally Veratrum and Arsenic in small doses will improve the appetite, digestion and blood-making.

If there is simple loss of muscular power, as in many cases of lateral curvature, we would recommend open-air exercise, and friction of the spine with cold salt water, and the use of electricity. Not only should electricity be used, but properly regulated gymnastics should be practiced, with a view of overcoming the deformity. This will prove sufficient in mild cases. There are other cases where a proper mechanical support is necessary. This support may take the form of a brace or corset with a steel base and upright, or the plaster of paris corset, which is our own preference. When it is applied, the patient should be suspended in order to remove or straighten the curvature as much as possible.

In Potts' Disease the objects desired by mechanical treatment are, the protection of the diseased area from irritation and pressure and the resting of the diseased parts by immobilization, and thus removing the superimposed weight. To fulfill these indications various methods are used.

If in any case there is irritation and pain, with tenderness on pressure, the child should maintain the recumbent position. Rest is all-important in these cases, and though it will sometimes seem as if the child could not bear the continued confinement, we will find that it absolutely improves in every respect, while maintaining the most perfect quiet.

A most excellent means of attaining perfect rest is afforded by a common camp cot, with the head elevated about a foot, and covered with a soft hair mattress; two crutches, softly padded, should pass from the foot up to the arm-pits, and an india-rubber webbing attached to the arms

of these to support the trunk. In this apparatus there is constant gentle extension; the body is supported by the webbing, the patient lying on the back.

The best method of treating the disease mechanically is no doubt by the plaster of paris jacket. Some skill is requisite to its proper application, so that it may be made to fit perfectly and still not be too heavy. Unlike the one applied for lateral curvature, it should not be made to lace, and thus removable at pleasure. Ankylosis is the object desired, and it can not be obtained by a constant removal of the jacket or brace. For a full description of the various forms of apparatus and their application in spinal curvatures, the reader is referred to works on Orthopedic Surgery.

CHAPTER XIV.

ADENITIS.

Inflammation of the lymphatic glands is characteristic of children, and was formerly classed as a manifestation of scrofula. Adenitis, however, occurs frequently in stout, robust children, as a result of an acute infectious disease of the nose, pharynx or bronchi.

Lymphatism is the name applied to a constitutional condition, in which any inflammation of the mucous membrane or skin sets up a hyperplasia of the lymph nodes with which these parts are connected, and which inflammation is out of all proportion to the exciting cause, and in which the enlargement tends to continue after the irritation producing it has ceased to operate. This condition is caused by anything which produces malnutrition or lowers vitality. It is essentially a condition of childhood, and its local manifestations are modified by age.

Adenitis, for convenience of description, is divided into Simple and Tubercular.

SIMPLE ADENITIS is an acute inflammation of the lymph nodes frequently terminating in suppuration.

Though usually secondary to some acute pathological process in the skin or mucous membrane, the original condition may have been so slight as to have been overlooked. The glands most frequently affected are the cervical, occasionally the axillary and inguinal.

ETIOLOGY.—Simple adenitis occurs in connection with diphtheria, scarlet fever or measles. It is frequently severe after scarlatina, terminating in suppuration.

Acute catarrhal processes in the pharynx or larynx often produce a mild form of adenitis, which rarely suppurates. It is very common in infancy.

PATHOLOGY.—There is an acute congestion, swelling, œdema, and an active hyperplasia of the lymphoid elements. The gland feels hard and elastic. On section, the gland is reddish brown, with small foci of hemorrhages. The lymph sinuses are dilated and obstructed by fibrin, granular matter and portions of altered white corpuscles. The stroma of the gland is swollen and infiltrated with cells. Should suppuration occur, the gland softens; the hemorrhagic centers soon change into yellow, purulent foci. These unite, forming an abscess within the periglandular structure. Sometimes the periglandular structure suppurates, and there is considerable inflammation of the surrounding cellular structure.

SYMPTOMS.—The period of the infecting disease belongs to the clinical history. The typical cases occur in infancy and the symptoms are those of the original disease, which usually is a catarrhal inflammation of the nose, throat, mouth or ear. The glands most frequently affected are the cervical.

A tumor appears below the angle of the jaw, accompanied by the usual signs of inflammation, which are, pain, heat and swelling. Suppuration occurs in the latter part of the second, and sometimes as late as the third or even the fourth week.

In this stage the pain increases, the skin reddens and the periglandular tissue swells. When suppuration has occurred, a bogginess is felt, which may be obscured by the surrounding tissue. Well defined fluctuation is only found when considerable tissue is destroyed.

DIAGNOSIS.—The diagnosis is easy, the enlargement and its location being sufficient.

PROGNOSIS.—Usually favorable.

TREATMENT.—The first indication is the treatment of any source of infection or irritation that may exist.

That for the glands is both local and general. If seen early and it is desired to prevent suppuration, cold applications, in the form of ice packs, may be applied to the swollen glands.

Our preference is an application of equal parts of Phytolacca and Glycerine. When it is desired to hasten suppuration, hot applications should be applied. When suppuration has occurred, the gland should be incised and the contents removed by a curette and the wound dressed with Iodoform Gauze.

Internally the remedies will be given according to the predominant symptoms.

Aconite, when there is fever, with the small, frequent pulse.

Gelsemium, if the patient is restless, the face flushed and eyes bright.

Phytolacca in combination or in alternation with either of the above, for the swelling and inflammation of the glands.

Calcium Sulphide, after suppuration has taken place.

CHRONIC OR TUBERCULAR ADENITIS.

Tubercular or Chronic Adenitis is the term now applied to what the older writers termed scrofula. Some authors say, "Scrofula is tubercle."

Tubercular adenitis is met with in all ages; most frequently, however, in children. The glands most commonly affected are the cervical.

ETIOLOGY.—This form of adenitis frequently follows neighboring pathological processes, such as an eczema, conjunctivitis, or one of the exanthemata.

Catarrhal inflammation of the mucous membranes and adenoid growths of the pharynx are predisposing causes of tubercular adenitis.

The resistance of the lymph tissue is weakened. This would probably explain the development of tubercular adenitis after whooping cough or measles, and of tabes mesenterica after intestinal troubles.

Tubercular adenitis does not necessarily mean a general tuberculosis. A distinction should be made between hereditary and acquired tuberculosis.

PATHOLOGY.—Usually an entire group of glands is infected, and it is generally the cervical group. The process is essentially chronic.

Two varieties of lesions are described. In the first there is a chronic adenitis, affecting the stroma and elements of the gland, which become hypertrophied.

In the second there are the lesions of tuberculosis, consisting of miliary granulations, ending in caseation.

Section of a gland shows it redder than usual, at times gray and somewhat translucent.

Tuberculous granules may be perceived by the eye. These contain many cells, vascular, and lymphatic vessels. Caseation rapidly occurs in them. A number of these

granulations unite, forming small, yellowish masses, which may be seen by the unaided eye.

These small, yellowish masses also soften at the center, unite with other similar masses, forming a large collection of yellowish softened material, resembling putty. Calcification may then occur, when the process is slow.

The surrounding tissues may become inflamed, resulting in adhesions and the formation of a periglandular abscess.

SYMPTOMS.—The chief features of interest in tubercular adenitis are: (a) The localized character of the disease. (b) The tendency to spontaneous healing. (c) The tendency of tubercular adenitis to pass on to suppuration. (d) The existence of an unhealed focus of suppuration as a constant danger to the system.

Chronic Adenitis may assume various clinical forms: (1) General tubercular lymphadenitis, which presents itself especially in the negro, and resembles in many ways Hodgkin's Disease. (2) Local tubercular adenitis, of which—

(a) Cervical is the most common form, beginning usually in the submaxillary gland.

(b) Bronchial, which is thought to be secondary to a focus in the lungs.

(c) Mesenteric. This form may be primary or secondary to a local intestinal tuberculosis.

As we have, in other places, described tubercular affections of the principal organs, we will confine ourselves here to a description of them as they affect the lymphatic glands.

In many cases the irritation giving rise to the development of tuberculosis is very manifest, and occasionally demands treatment, but in others it is very slight. The superficial lymphatic glands are then observed to become slightly enlarged and hard, so as to be very perceptible when the finger is passed over them. This occurs fre-

quently in children in the superficial cervical glands, without further development. When the disease has fully commenced, one or more of the glands continues to enlarge, a low form of inflammation sets in, and deposit takes place in the adjacent tissues, which become swollen and hard. Now the inflammation becomes more or less acute, the part is reddened, painful, hot, tender on pressure, and the swelling increases rapidly. Continuing in this way, suppuration commences, and the deposit is gradually changed into pus, which in time makes its way to the surface, and is discharged. This occupies a variable period of time, sometimes passing through all its stages in eight or ten days, and at others occupying as many weeks. In some cases the inflammation is acute and the pain severe, but in others it progresses without much redness, heat, or pain.

The pus forms slowly in many cases, and there is but little tendency to its discharge, and in others weeks pass, the part still continuing hard; and at last, when our patience is nearly exhausted, suppuration occurs rapidly. Sometimes the pus is well formed and healthy, and when discharged the part heals readily; but at others it is watery, of a greenish-brown color, or clear, with more or less flocculent material mixed with it. Occasionally the abscess exhibits no tendency to point, but the pus burrows in the tissues for a long time, unless it is opened. In other cases, when the pus is discharged the abscess does not heal, but continues to discharge a dirty, flocculent pus; and if we examine it, we will find the walls ragged, and often a chain of lymphatic glands dissected out, and lying at the bottom.

The constitutional disturbance varies greatly. Sometimes there is quite brisk febrile action when inflammation first comes up, with loss of appetite, arrest of secretion, and much prostration. In these cases, suppuration is fre-

quently marked with a chill or rigor, and occasionally attended with hectic fever and night-sweats. In other cases, there is no constitutional disturbance further than loss of strength, languor, and a peculiar pallid appearance of the surface.

DIAGNOSIS. — The diagnosis is readily made. The chief features are the age of the patient, the location of the enlargement and the slow caseation and softening.

It should be distinguished from a simple, chronic adenitis, which is usually limited to one or two glands, whilst when the glands are tubercular an entire mass is usually affected.

PROGNOSIS. — In very many cases the prognosis will be favorable, as the tendency to the disease is not so strong but that it may be removed by appropriate treatment and measures calculated to improve the general health. There is no doubt that by proper care the constitution of a child can be so entirely changed, in the course of time, that the tendency to this disease will be entirely removed. There are other cases, however, in which, though we may get the patients safely through the first attack, they will inevitably die, sooner or later, of this or some analogous affection.

TREATMENT. — When children are predisposed to tuberculosis, a judicious hygienic plan should be adopted to strengthen the constitution, by improving the functions of digestion, assimilation and nutrition. Such children are said to be tender, and hence they are kept in the house a considerable part of the time for fear of colds and sickness, and being weakly, they are petted, and their appetites pampered; and not spending their time in play, as they should do, their minds are precociously developed at the expense of their bodies. Instead of this, such children should be accustomed to the open air from an early age. As soon as they commence walking they should play in the open air

whenever the weather is suitable. In this way the constitution is strengthened, and the liability to colds by alternations of temperature much reduced. Sleeping-rooms should in all cases be large, well-ventilated, and exposed to the direct rays of the sun during portions of the day. Up to the age of eight or ten years the child's occupation should be out of doors, and whether it is play or work, it should be of such a character as to bring into action all the muscles of the body. Before this age the child should not be required to study, neither should it be sent to school, there being sufficient time after this for all laudable educational purposes. Regular meals of good, wholesome food, with fruits in their season, with an avoidance of all cakes, sweetmeats, etc., are of the highest importance. An observance of these rules, the children being raised in the country, will almost invariably result in a complete change of constitution, and in increased vitality.

In the selection of our remedies we are guided by the same principles to which we have previously called attention. Many so-called alteratives have been used and recommended, but better results will be attained by selecting them advisedly. We mention only those which we have found of most service.

Arsenic, in the form of Fowler's Solution, we have found to be good as a restorative in children. We frequently combine it with the Syrup Lacto-Phosphate of Lime. It is indicated when there is bad nutrition, with a tendency to degeneration of tissue. This is manifested by a muddy or dirty appearance of the skin, with inelasticity; flabby muscles, pointed and contracted tongue, and cold extremities.

Ammonium Iodide we have looked upon as being one of our best remedies in adenitis. It is neither as depressant nor as irritant to digestion as Potassium Iodide. It is indicated when the nutritive powers are feeble, the eye dull,

face expressionless, circulation feeble and glands enlarged.

Calcium Sulphide is specific for glandular suppurative inflammations.

Cod-Liver Oil is employed as an aid to nutrition or as a tissue builder. It is employed when there is anorexia, frequent pulse, tissues soft and atonic. It is best used in the form of an emulsion.

Corydalis is one of our good alteratives, and is used for nodular swellings, enlarged lymphatics and yellow skin. Its action is not only upon the glandular enlargements, but upon the digestive organs as well.

Echafolta, though one of the newer remedies, has attained an enviable reputation as an alterative in nearly all blood dyscrasias. Its action is best when there is suppuration, with a watery, ichorous discharge, feeble vitality and emaciation.

Ferrum Iodid. is a restorative and tissue builder. It is indicated when the anaemia is marked and there are lymphatic enlargements, or tubercular disease of the joints.

Hypophosphites Comp. is also a restorative. We frequently use it in combination with Cod-Liver Oil, or alone when the latter is not tolerated. Its indications are, pallid, waxen surface, extremities cold, feeble nutrition, debility, and an enfeebled intestinal digestion.

Iris is one of our oldest and best remedies in chronic indurations and enlargements of the lymphatic glands, especially if there is any swelling of the thyroid. Associated with this condition there is imperfect nutrition and anaemia.

Phytolacca has a direct influence upon lymphatic inflammations, and should be used both in recent and chronic cases. Its direct indications are irritation and burning of the skin, soreness of the mouth, pallid mucous membranes. We employ it both internally and externally.

With many physicians Potassium Iodid. has long been

a favorite remedy for chronic glandular enlargements. We find other remedies more frequently indicated, especially in children. It has its place, however, and it will be found to be the remedy when there is a pale, leaden color of the mucous membrane of the mouth and tongue. When there are any evidences of irritation it is not to be thought of.

Stillingia has been in use by the Eclectics as a restorative for many years. Its indications are a tumid, red, glistening mucous membrane, with scanty secretions. It is a good remedy when indicated.

These remedies may be used singly or in combination. Our personal preference is always the single indicated remedy.

Local means should not be neglected. Iodine and Glycerine have been used for years. As stated before, we prefer Phytolacca and Glycerine, equal parts.

An Ichthyol Ointment, consisting of two or three drachms of Ichthyol to an ounce of Lard, is recommended to prevent suppuration. Should suppuration take place, an incision is made and the cavity cleaned and packed with gauze.

The question of extirpation must be settled by the physician when the case presents itself. A less radical measure advocated by many is the introduction of Tr. Iodine by means of electricity. The injection of an Emulsion of Iodoform and Glycerine is recommended by many. .

CHAPTER XV.

THE SPECIFIC INFECTIOUS DISEASES.

DIPHTHERIA.

Diphtheria is an acute, specific, contagious disease, its peculiar local characteristic being a fibrinous exudate or membrane upon the mucous surfaces affected. Its sys-

temic manifestations are an irregular fever, prostration, cardiac depression, anaemia, and frequently albuminuria. The local and general conditions vary considerably in degree of severity. Diphtheria is without doubt one of the most dreaded and fatal, and at the same time one of the most common, diseases of childhood. It is not by any means a disease of modern times, medical history proving that it was known to the ancients. Epidemics occurred in this country in the seventeenth and eighteenth centuries, and since 1850 it has received considerable attention from American writers.

Etiology.—Diphtheria occurs epidemically, endemically and sporadically. In most of the larger cities it has become endemic, becoming epidemic at certain seasons of the year.

No fact seems better established than that diphtheria does not arise *de novo*, direct infection being the cause in the great majority of cases. The specific poison is received in or upon some part of the system, either by breathing the air surrounding the patient, by direct contact with the discharges from the nose or throat of those suffering from the disease, or by means of some intermediary object, as toys, books, clothing, drinking utensils or instruments. It is well established that the virus clings tenaciously for a long time upon objects with which it may come in contact. This fact is what often renders the tracing of contagion so extremely difficult. Although diphtheria is contracted by contact, unhygienic conditions, by lowering the vitality, increase the susceptibility. Epidemic outbreaks have had a close relationship with decomposing organic matter, bad drainage, sewage and damp, ill-ventilated apartments. Hence we look upon the cause of diphtheria as being undoubtedly a specific animal poison, though how propagated or generated we are unable to say. Among predisposing causes, age is the most important.

It is essentially a disease of childhood, the most cases occurring between the second and seventh year, diminishing rapidly after the tenth. The larger number of deaths occur between the second and fifth year. It seems uncommon in the first half year of life, although cases are recorded. We have met with them, one fatal case occurring in a babe four weeks old, during the prevalence of a severe epidemic.

Both sexes are equally liable. Especial predisposing causes are unhealthy conditions of the mucous membrane of the nose and throat, such as chronic naso-pharyngeal catarrh, enlarged tonsils and adenoids.

Whilst it prevails at all seasons of the year, it is most prevalent during the winter and spring. Its period of incubation is from two days to a week. Recent medical literature classifies it as a microbial disease, it seemingly being well established that the Klebs-Loeffler bacillus is the specific germ. By their growth and multiplication at the seat of the local lesion, they develop certain organic substances termed toxins, which are absorbed in the circulation, and by their action produce constitutional symptoms and remote effects more characteristic of the disease than the local lesions.

PATHOLOGY.—We have already intimated that the disease is constitutional as well as local. We have seen severe constitutional symptoms when the local lesion was very mild, or not even manifest. However, the chief pathologic feature of diphtheria is the fibrinous exudate or membrane upon the mucous membrane. Its usual seat is the tonsils; in severer cases it spreads to the uvula, pillars of the fauces, soft palate, posterior nares, lateral walls of the pharynx, larynx, trachea and bronchi, according to the severity of the attack. It varies in color from a grayish white to a dirty green, or, in very severe cases, nearly black.

The lesion is an acute degenerative change in the epithe-

lial cells of the affected mucous membrane, muscular, glandular or nervous system. The membrane consists of fibrin, epithelial cells, pus cells, granular matter and mucus. This degenerative change in the cells is accompanied by a proliferation and infiltration in and upon the mucous membrane and changes in the cell substances, which result in the formation of necrotic substances and cell-death. In the milder cases the epithelial layer of the mucous membrane is simply replaced by this necrotic process; but in the severer cases the fibrinous membrane infiltrates all the layers of the mucosa, which undergoes necrosis more or less complete. A forcible detachment of the membrane is followed by bleeding and its rapid reformation. It is reformed from beneath, and is separated in masses or gradually by an exudation beneath it. The separation, except in the gangrenous cases, leaves the mucous membrane completely restored. The tissues surrounding the exudate are hyperæmic, more or less œdematosus and the seat of a muco-purulent secretion.

The changes in the viscera are similar to those described as taking place in the mucous membrane. In the heart, the muscular structure and nervous mechanism seem to suffer most. Among the changes found are myocarditis, occasionally pericarditis, and fatty degeneration of the muscles. The spleen is swollen and softened. Hemorrhages are seen beneath its capsule.

We have seen the liver very much enlarged. Hemorrhages are also seen upon its surface and within its substance. There may be fatty degeneration. The lymphatic glands of the neck are swollen, but rarely suppurate.

In the kidneys there is a degeneration of the epithelium of the tubes and glomeruli, and in severe cases an acute exudative or diffuse nephritis. In nearly all cases of diphtheria the kidneys are involved. The changes in the peripheral nerves are one of the characteristic effects of

diphtheria. The paralysis is not due to a central lesion, but to a peripheral neuritis. There is here, also, a degenerative change, either interstitial or parenchymatous. The degeneration stops, regeneration begins and usually results in a complete restoration of the nerve fibers.

The blood is dark; its coagulability diminished; the red corpuscles diminished, the white increased.

SYMPTOMS.—The clinical picture of diphtheria is one presenting a wide range of symptoms, according to the location of the trouble, the severity of the attack and the complications.

It has been customary to divide the disease into the mild or tonsillar form and the malignant. Other subdivisions may be made in accordance with the location of the exudate; but as they are simply due to an extension of the membrane, the classification adopted will suffice for all practical purposes.

The incubation period varies from two to ten or twelve days. In violent epidemics it may be shortened materially, in some instances occupying only one or two days.

The symptoms of the forming stage are similar to those of fevers and inflammations generally. For a day or two, sometimes for a week, the patient is listless and languid, does not play with the usual zest, is fretful at times, does not sleep well, especially at night, drinks frequently, and has a variable appetite.

Following this is a slight chill, lasting one or two hours; not unfrequently it is so light that it is not noticed by the parents. Following this, febrile reaction comes up slowly, and varies greatly in different cases. In some the fever is acute, and is a marked feature of the disease. In others the symptoms of fever are but slight—an accelerated and soft pulse, arrested secretion from the skin, kidneys and bowels, and an increased temperature as marked by the thermometer, thou

to the hand; and there are aching and pains in the head, back and limbs.

In severe cases the onset may be abrupt—vomiting, headache, chilly sensations, and temperature of 103° or 104° F. The patient complains or shows signs of sore throat at the commencement of the disease. There is difficulty and pain in deglutition, and the child swallows frequently to moisten the throat. Though the temperature is at first elevated, it forms no guide as to severity, progress or result of the trouble. Many of the worst cases do not have a temperature above 101° F. at any time. We have frequently seen fatal results when the temperature was normal.

The cervical lymphatic glands are swollen, and an examination of the throat shows the tonsils swollen, reddened, and the fauces presenting the usual appearances of a catarrhal inflammation. Upon one or both tonsils, usually one, will be found the exudation—gray or ashen-gray in color. From this patch the exudation spreads to the pillars of the fauces, uvulae and soft palate.

The exudation varies somewhat in color and appearance with the stage, severity of the attack and the degree of toxæmia. It is at first of a grayish color. There may be considerable moisture, when it will be dull in color; and in cases attended with a high temperature, say of 103° or 104° F., it seems as dry as parchment and of a pearly-gray color, whilst the surrounding tissues are of a deep-red color.

In septic cases it may be rough and ragged, attended with considerable odor; a heavily coated tongue, changing, as the disease progresses, to a purplish or even to a black hue, and attended with hemorrhages.

The constitutional symptoms are usually slight, if the membrane be confined to the tonsils. Unfortunately, this is not the rule.

The swelling increases, the uvulæ and soft palate become edematous, the former so much so that it touches the tonsils upon either side. The membrane by the third or fourth day will cover the tonsils, pillars of the fauces, uvulæ, and at times even the posterior wall of the pharynx. When it does, it is styled "Pharyngeal Diphtheria."

Deglutition is now almost impossible, and the respiration difficult and labored. The temperature will vary from 101° to 103° F., whilst the pulse is very rapid and weak, being out of proportion to the temperature. This rapid, weak pulse we have come to regard as characteristic of diphtheria.

Should the disease pursue a favorable course, the membrane separates, so that in eight or ten days the throat will be clear. With the gradual disappearance of the deposit there is a corresponding improvement of the constitutional symptoms. It should be remembered, however, that the disappearance of the deposit does not always, by any means, assure recovery. Many complications that will terminate fatally may yet ensue.

In malignant cases the onset, as has been previously noted, may be abrupt or insidious. The deposit spreads from the tonsils to the fauces, uvulæ, palate and pharynx. It may now extend upward into the nares, causing what is known as "Nasal Diphtheria."

There is a discharge of serum and mucus tinged with blood from the nostrils. The obstruction of the nostrils, due to the swelling and deposit, renders breathing so difficult that the mouth is kept open, and the breathing becomes noisy. The tongue, as a consequence, becomes dry, the lips fissured, and bleed easily. The discharge also excoriates the upper lip, and it becomes sore. The odor from the throat and nose is exceedingly offensive. Swallowing is difficult, and fluids are regurgitated through the nose.

In these cases of nasal diphtheria the parotid and lymphatic glands of the neck swell rapidly and attain considerable size. The constitutional symptoms advance steadily with the extension of the membrane. The system seems overwhelmed with the attendant toxæmia. The face is pale, anaemic, due to the destruction of the red corpuscles. There is marked muscular weakness and prostration. The pulse is feeble and rapid, 120 to 150. There is mental dullness, apathy and stupor. The latter symptoms apply to what is styled the "septic form." As a rule, the general symptoms bear a definite ratio to the severity of the local disease.

When the membrane extends downward to the larynx, it does so usually within the first week. We then have what is styled "Laryngeal Diphtheria." It begins, as a rule, gradually, with a hoarse cough and voice and some roughness in respiration. The course then presents all the symptoms of croup—the whistling respiration, croupal cough, loss of voice, and gradually increasing difficulty of breathing; suprasternal and infrasternal recessions, restlessness and cyanosis.

The most frequent complications and sequelæ of diphtheria are broncho-pneumonia, albuminuria, myocarditis and paralysis.

Broncho-pneumonia is especially common in laryngeal cases in young children. It renders the prognosis quite grave.

Albuminuria is present in almost every case of moderate severity. It is rarely attended by dropsy or uræmia. When acute nephritis is present, in addition to the presence of albumen in the urine, dropsy and uræmia supervene.

Myocarditis is present in a greater or less degree in nearly all severe cases. Whether the sudden deaths from heart failure are due to the myocarditis, or to a neuritis of the cardiac nerves, is not definitely determined.

We have seen deaths when the membrane had entirely disappeared and convalescence seemed assured. Suddenly the child would be prostrated, extremely weak and anæmic, with complete anorexia. The heart sounds become muffled and indistinct, the pulse irregular and weak, and death results. In other instances death has come suddenly while the child was partaking of nourishment. No doubt, the most frequent sequel is post-diphtheritic paralysis, which is said to be a multiple neuritis. It usually affects the palate and uvulae, interfering with speech and with the swallowing of fluids. If the pharyngeal muscles be involved, there will be difficulty in deglutition. It may affect the extremities, or be so general as to render the patient entirely helpless. It may follow cases so mild that the aid of a physician is not called for the throat affection. Fortunately, the patient usually recovers from post-diphtheritic paralysis. Only in one instance have we seen death result, and in that case the muscles of respiration were affected.

DIAGNOSIS.—The diagnosis is based upon the local and constitutional symptoms. The local evidence is the exudation, which is a definite patch situated upon a deeply congested area of the mucous membrane, usually, at first, the tonsil. From this patch it spreads to the fauces, larynx or nares. The constitutional evidences are the fast, feeble pulse, marked anæmia, progressive asthenia and toxæmia, rapid enlargement of the cervical glands, albumen early in the urine, and post-diphtheritic paralysis.

PROGNOSIS.—There is probably no disease of which it is more difficult to foretell the outcome. There is none in which the unexpected more often occurs. We have seen the mildest cases suddenly develop laryngitis.

The factors to be considered in framing a prognosis are the age, extent and rapidity of extension of the membrane,

and the amount of septic infection. In children under five years of age diphtheria is very fatal from laryngitis and broncho-pneumonia.

The unfavorable complications are laryngitis, a large amount and persistence of albumen in the urine, excessive nasal discharge, uræmia and vomiting late in the course of the disease. The import of the diphtheritic paralysis and myocarditis we have previously mentioned.*

TREATMENT.—No part of the treatment is of more importance than is that which looks to the protection and welfare of the unaffected remainder of the family and of the vicinity. Prophylaxis, therefore, occupies the first place.

In fatal cases no public funeral should be permitted. All cases should be prohibited from mingling with other children for at least two weeks after recovery. All undoubted cases should be quarantined, and doubtful ones isolated until the diagnosis is assured. The patient should be isolated, if possible, in a well-lighted and aired room, as remote as possible from the remainder of the family. An upper room is preferable, if possible, the room being previously prepared by the removal of all unnecessary furniture, curtains and clothing. Nothing should be left, save that only which is necessary for the comfort of the patient.

The nurse should wear clothing that can be easily washed, and should mingle as little as possible with the remainder of the family. All utensils used for drinking or eating should be kept apart for the use of the patient only, and should be frequently disinfected. The bed should be changed daily, as well as should the patient; the bed clothing and clothing placed in a disinfecting solution and boiled. All cloths used for the reception of discharges should be burned.

The patient, no matter how light the attack, ought to be

placed in bed, and strict quiet should be enjoined until convalescence is assured.

A sponge bath of hot Soda Water, once or twice daily, is a grateful adjunct when there is a high fever. The diet should be one easily digested, but as nourishing as possible. If there be anorexia, the patient should be fed at stated intervals. Milk should be our main reliance. Meat juices or broths can be added.

Diphtheria being a disease of the blood, the treatment will in all cases be general, with the addition of local treatment in severe throat complications.

The prime objects are to sustain the strength of the patient, so as to enable him to combat the effects of the toxænia and to limit the production and extension of the exudation.

Internally we prescribe our remedies for their direct effect. Those we find most frequently indicated are as follows:

Aconite. — This remedy is useful in the onset of the disease, owing to its influence upon the circulatory system. We follow the usual indications: the small, sharp and frequent pulse, dry and hot skin, secretions suppressed. It is the remedy for the sthenic case.

Belladonna. — Also useful in the early stages. It is the remedy for congestion, stimulating the capillary circulation in the engorged parts. It is indicated by the dull eyes with dilated pupils, mental dullness and inclination to stupor, pain in the throat and difficult deglutition. It may be used alone or in combination with the other indicated remedies.

Baptisia. — Useful in septic cases alone, in combination or alternation with other remedies. Indications: Dusky color of face and mucous membranes, with typhoid symptoms, tongue dry and thin, offensive breath, with brownish discharge from the nostrils.

Echinacea.—Another remedy for sepsis. It is used both internally and locally. Its indications are: a tendency to gangrene or sloughing of the tissues, throat dark and full, tongue full, with dirty, dark brown coat, offensive odor of the breath, profuse acrid saliva, oppressed breathing, sepsis.

Gelsemium.—Also useful in the early stages of the sthenic case. It is indicated by the flushed face, bright eyes, contracted pupils, nervousness.

Iron (Tr. Ferri Chloridi).—This is one of the oldest and most widely used remedies in diphtheria. It is given to maintain the strength by combating the anæmia so frequently met. It has its indications as well as any other remedy. They are: swollen and engorged mucous membrane of a deep-red color, red tongue, or, in other words, the indications for an acid, plus the anæmia.

Phytolacca.—This is the most frequently indicated remedy. The symptoms calling for it are: full tissues, mouth and throat sore, enlarged lymphatics. We may use it with the indicated sedative, or in alternation.

Pilocarpus.—Indicated by the suppression of the secretions, especially of the skin; elevated temperature, sharp, hard pulse, dry skin and mucous membrane; scanty, high-colored urine of low specific gravity. By increasing the secretions, it is said thus to loosen the membrane and cause its exfoliation. It is a powerful depressant, and ought to be used with extreme care. It is recommended in diphtheritic laryngitis.

Potassium Bichromate we use more particularly in those cases of a croupy nature, accompanied by difficult, wheezy breathing, and great depression. From one to two grains may be dissolved in half a glass of water and given in teaspoonful doses every half hour or hour.

Potassium Chlorate.—Cadaveric odor, mucous membrane bluish-white, tongue covered with a thick, dirty coat-

ing. Though so generally used in sore throats of all description, its use should be more restricted, as it is conclusively known to be a renal irritant, and is capable of doing much damage.

Sodium Sulphite.—We recognize the case by the pasty-white coat on the tongue, pallidity of mucous membranes, and a general atonic condition of the whole system. The dose will be three grains every two hours. It is useful in the so-called septic cases. We use it both locally and internally.

Sulphurous Acid.—If the tongue has a dirty coating, with pungent breath, and the excretions look as if fermented, we may use it as an acidulated drink, adding two or three drops to half a glass of water, and let the child drink at pleasure. We get a much better action from the acid in this way than we should if syrup were added. Of the Sulphurous Acid, 5ss. to Water 5iv., and given in teaspoonful doses every two hours, will give marked benefit.

Stimulants.—Diphtheria being so depressant, stimulants are frequently called for; in fact, they are needed in all cases of any severity. They are indicated by marked prostration, feeble pulse, and weak first sound of the heart. We use either brandy or whisky, administering quite freely.

Strychnine.—Also indicated by the weakness and prostration. We use it for a nerve stimulant in the cases of post-diphtheritic paralysis.

Locally a variety of substances have been and are used. We like a wash of Boracic Acid, and use it for the nose and mouth.

Peroxide of Hydrogen, one to ten, has been used considerably of late years. It is said to be a solvent to the membrane.

Echinacea and Sodium Sulphite we have also used locally when the indications called for it.

When we have diphtheritic laryngitis, our best success

has been with the inhalation of a saturated solution of Pepsin, using a steam atomizer and tent. Lime Water or a solution of Papayotin can be used the same way.

Force should always be avoided in the use of any local application, whether gargles, inhalations, dry powders or swabs. Much more is lost in the struggles incident to the application of a swab or brush than is gained by the application.

In diphtheritic laryngitis, when the means advocated fail, as shown by the signs of increasing stenosis, as stridulous breathing, cyanosis, etc., intubation or tracheotomy should be performed.

As cleanliness is necessary, the nasal chambers should be irrigated and kept as clean as possible. For this nothing is better than a solution of Sodium Bicarbonate.

The albuminuria should be treated with the indicated remedies, as should the consequent paralysis. In the treatment of the latter, electricity and massage should be systematically employed.

VARIOLA.

Smallpox is an acute infectious disease characterized by a sudden onset, severe period of invasion, and by an eruption, passing successively through the distinctive phases of papule, vesicle, pustule and crust.

The mucous membrane in contact with the air may also be affected, and severe cases may be accompanied by cutaneous and visceral hemorrhages.

Etiology.—Smallpox is a disease of such antiquity that it is not known where it originated. It was brought to America by the Spaniards in the sixteenth century. Once recognized as one of the most virulent and dreaded diseases, vaccination has so modified it as to rob it of many of its horrors. Opportunity for its study does not present itself as formerly, except it be in its modified form.

Smallpox is caused by a specific contagion, generated during the progress of the disease in the human body. This contagious matter may be propagated by contact with a person affected, or with articles of clothing, or indeed anything that has been in contact with him, and by inhaling an atmosphere impregnated with the poison. This atmospheric cause varies in different cases, in some extending but a short distance from the person, frequently confined to the room; in other seasons extending considerable distances in the direction of the prevailing winds.

The disease is, so far as we know, always produced by the one cause, the specific virus of smallpox, and is never generated anew or without this. While it is thus contagious, it also becomes endemic and epidemic by peculiar states of the atmosphere.

The virus of smallpox acts upon the blood, giving rise to such changes in this fluid as produce all the phenomena noticed, and generating within it a virus similar to itself. Finally, this is thrown upon the surface in the form of pustules, and, the blood being freed from it, convalescence ensues. One attack usually confers an immunity from subsequent ones, and each case points to a previous one. It is common to either sex or any age, but is particularly fatal in children.

PATHOLOGY. — The anatomical characteristic of smallpox is an inflammation of the skin, passing through the distinctive phases of papule, vesicle, pustule, and a crust. The papule is formed by an hyperæmia of the papillæ of the skin. These become elevated by an increase of the cells of the rete mucosum. The vesicle is formed by the elevation of the superficial layer of the epidermis, and is the result of the pressure exerted by the fluid exudate — the result of the acute inflammation. The pustule is formed by the filling of the vesicles with pus cells. The pustules rupture, and the result is the scab.

The mucosa of the mouth, pharynx and the œsophagus may be the seat of an eruption. In the hemorrhagic form, extravasations may occur on the serous and mucous surfaces or in the parenchyma of the viscera, in the connective tissue, or about nerve sheaths. The secondary lesions found are congestion of the lungs, a broncho-pneumonia, occasionally fatty degeneration of the liver, or a nephritis.

SYMPTOMS.—It is usual to divide smallpox into four forms—the discrete, confluent, hemorrhagic and varioloid. The latter is smallpox-modified by vaccination. These differ in severity, not in character. In discrete smallpox the pustules are not so numerous but that they have room for full development upon the skin. In confluent smallpox the points of eruption are so numerous that, as they are developed into pustules, they crowd upon each other and run together, so that on large portions of the surface nothing is seen but the eruption, and, as it matures, the formation of a single crust.

The period of incubation has been variously estimated at from seven to twelve days, and in occasional instances even longer.

In the discrete form the premonitory symptoms are not severe. The child will be fretful, restless in its sleep, and, if old enough, will complain of feeling tired. The chill is tolerably well marked, though not severe, and lasts from one to two hours. There may be convulsions, headache, severe lumbar pains and vomiting. The pains in the back and limbs are pretty constant symptoms and are, in a measure, peculiar to this disease. The febrile reaction comes up pretty actively, even reaching 103° or 104° F. the first day. The eruption generally makes its appearance during the latter part of the second and during the third day, and at this time the fever has attained its highest point. By the fourth day the fever will have subsided to a considerable extent, and from this to the tenth or twelfth day it

is so slight as to give but little annoyance. At this time, when maturation is complete, a secondary fever is developed, which, for a few hours, is pretty active. This passing off, secretion is established, the appetite and digestion are restored, and the child convalesces rapidly.

In the confluent form the premonitory symptoms are noticed earlier. The child appears depressed, its appetite is poor, it is restless and fretful during the day, and does not sleep soundly at night. As we approach the period of chill these symptoms are more marked, and the child presents evident symptoms of suffering. The chill, in this case, is usually well marked and protracted, the temperature is really lowered, the pulse increased in frequency, the skin contracted, presenting the cutis anserina, and in many cases there are marked rigors.

The febrile reaction comes up rapidly in most cases, and runs high. The surface is hot and dry, the pulse frequent, full and hard, the urine scanty, the bowels constipated, the mouth dry, the tongue coated with a white fur, the face flushed, the eyes bright, with great restlessness and irritability. The child expresses evidences of suffering that can not be mistaken, and we suppose it has all the aches and pains that are pathognomonic of smallpox in the adult.

It is in this stage, about the second day, the so-called initial rashes occur, which may be misleading. They are of two kinds, the scarlatinal and the macular or measles. They are limited to the lower abdominal region, the inner surface of the thighs and the lateral thoracic region. These rashes are of diagnostic value.

The fever continues without abatement until the eruption makes its appearance. The symptoms of suffering pass away after the first day, and there is usually not so much restlessness, though occasionally the irritation of the nervous system continues to be a marked feature, and there may be convulsions and occasionally evide
n.

About the time the eruption is making its appearance the throat seems to be stuffed up, and there is free secretion from it and the mouth. In some cases the throat is swollen, and the secretion profuse and tenacious, rendering deglutition, and even respiration, difficult.

The eruption appears on the third day, at first on the face, then on the trunk, and finally on the extremities, usually not being fully out before the end of the fourth or the fifth day. In most cases there is a slight abatement of the fever after the eruption has made its appearance. It varies greatly in intensity in different cases. In some it is very active in all its symptoms, and children are frequently delirious. In others it presents the usual symptoms of an infantile remittent. In the more malignant cases it is asthenic in character, and the symptoms are of a typhoid type.

About the twelfth day from the chill, or ninth from the eruption, a secondary fever makes its appearance, and lasts from one to three days. Usually it is very active, and the child suffers more from the fever than at any time during the progress of the disease. Maturation being complete, when this fever declines, the secretions are re-established, and the child slowly convalesces.

Having described the general symptoms of the disease, we must now study the eruption. When it first appears it simply presents a small red spot, resembling somewhat a flea bite or mosquito bite. These look as if slightly elevated, and when we place a finger upon one it feels hard, as if a small shot were imbedded in the skin. On the second day the redness has increased in size, the elevation is more perceptible to the eye, and a minute point is seen in the center from which the future pustule is to be developed. On the third day the red spot has increased still more in size, and in its center is seen a small vesicle, distinctly rounded in form, and filled with a clear, limpid serum. On

the fourth day this has increased in size, is flattened, seems to be tied down in its center — umbilicated — and the lymph is becoming yellowish and opaque. On the fifth day it has attained about one-half its size, is yellowish and opaque, distinctly umbilicated, and stands on a swollen base, and presents a red areola.

Continuing to increase in size, it attains its maturity by the ninth day, when it is three-eighths to one-half an inch in diameter, the red areola being about as much larger; it is yellowish and opaque, and distinctly umbilicated. The tumefaction of the base, when the points of eruption are numerous, is such as to give a uniform swelling of the surface. Thus, in the severer cases, the eyes are closed, and the features so effaced that the person could not be recognized.

When maturation is thus completed, some of the pustules burst and discharge a portion of their contents. In all it desiccates, and forms a crust or scab, which is retained in contact with the skin by the epithelial investment of the pustule. In from three to nine days this gives way, and the scabs are thrown off. The parts, where they are developed, present a bluish or livid appearance, which slowly passes away in some five or six weeks, though it can be noticed for as many months when the person is exposed to the cold.

In some cases a process of ulceration is set up at the base of the pustule, and the true skin is destroyed, to a greater or less extent. This causes those depressions that we call pitting, and which are never effaced.

In the hemorrhagic form, the premonitory symptoms are of greater severity. With the appearance of the rash, which is hemorrhagic, ecchymoses appear upon the conjunctiva. Hemorrhages occur from the mucous membranes, and death may take place before the rash has fully appeared.

In other instances the hemorrhages do not take place until the eruption reaches the pustular stage.

The skin seems swollen and dusky from the commencement. When the eruption makes its appearance it also is discolored, and the pustules, instead of being yellowish, have a shade of brown or, in some cases, are black. This is associated with the brown tongue, sordes on the teeth, frequent small pulse, and other typhoid symptoms.

Smallpox may be complicated with inflammation of any organ or part. These are not very common, and are usually recognized with ease. There are some irregularities in its progress, however, that should be studied with care. In one, the disease having progressed to the fourth day, we find the skin swollen, and assuming a dusky appearance; yet the eruption does not come out, or appears sparsely. At the same time we find the child becoming comatose, and also that this is influencing every function of life, until finally death results. In a second, the eruption having made its appearance, recedes; the skin is swollen and dusky, and coma comes on, as in the preceding case.

VARIOLOID.

Varioloid is smallpox modified by the vaccine disease. In some persons the cow-pox is but partially protective, or it may be wholly protective at first, but as time passes, the susceptibility to the virus of smallpox may be gradually reproduced.

Varioloid is produced by the specific contagion of smallpox, and in turn it generates a virus which will give rise to the fully developed disease in a person not protected by vaccination. It differs only in that the symptoms are milder, and that it runs a shorter course. The symptoms are usually those of the discrete form of smallpox. The febrile action subsides with the appearance of the eruption, or in the more violent cases is remittent in character, and

not severe. The period of maturation is generally but seven days, and the secondary fever is short and mild. The desiccation and removal of the crusts or scab is also rapid, so that by the twelfth to the fifteenth day the surface is pretty well freed from them.

DIAGNOSIS.—The diagnosis of smallpox is not usually difficult. The symptoms precede the chill for some two or three days, this being marked, and followed by high febrile reaction, in which the child evidently suffers much pain. The eruption of red points, hard under the finger, is the diagnostic evidence at this time. Afterward the vesicle, and then the umbilicated pustule, and its regular and slow development, distinguish this from all other eruptions.

The disease from which it is most difficult to differentiate is varicella. The principal diagnostic points are the absence of prodromal symptoms in varicella, the primary appearance of the rash, upon the neck and trunk in the latter, and first upon the forehead and traveling downward in variola. In varicella the vesicles contain serum only; in variola, first serum, changing to pus. In the former the vesicles are unicellular; in the latter, multicellular.

PROGNOSIS.—We regard the prognosis of smallpox as favorable, except in exceptional cases. Some children will succumb to even its milder form, almost all dying under one and the majority under two years of age. The mortality attending smallpox seems to have lessened in the ratio that the people are protected by vaccination. Complications, as laryngeal and pulmonary affections, render the prognosis more grave.

TREATMENT.—It is contended by the majority of writers that smallpox is a self-determined disease, and has a regular course to run, and that it is not shortened by reiteration or by other continued fevers.

If the smallpox virus is generated within the blood, and this is the cause of the disturbance we witness, that disturbance will be less just in proportion as this virus is developed slowly and removed by the excretory organs. There is no doubt that the virus of smallpox in very considerable quantity may be removed by the excretory organs. We have already seen that the development or activity of such blood poison is in the ratio of the frequency of the circulation and other functional derangement. If, therefore, we control the circulation, and establish function, we will lessen the rapidity with which the virus is generated, and arrest the septic decomposition that accompanies it; and if, at the same time, we stimulate excretion by the skin, kidneys, and bowels, we will remove considerable portions of it, and thus lessen the eruption upon the skin.

Experience, which is the test for every new doctrine, confirms these views. The treatment, then, will be the same as for any other form of fever.

Recognizing its contagiousness, the patient should be isolated in a room suitable for an infectious disease. Most municipalities insist that it be in a special hospital. If in a room in the house, it should be a well-ventilated upper chamber. The room should be previously prepared by having everything unnecessary to the comfort of the patient removed. The patient and bed linen should be kept scrupulously clean, and everything coming in contact with him sterilized.

Throughout the progress of the disease, which is exhausting in its character, especial pains should be taken to prevent irritation of the digestive organs, and to support the strength by appropriate food. When the child is nursing, the mother's milk is sufficient and is the best food. At a more advanced age, boiled milk, slightly salted, taken hot, will be more kindly received and better digested than

most other food. Animal broths and cooling acidulated drinks are well borne and grateful; later, soup, jellies and eggs. During the fever, sponging with Soda Water will be both grateful and beneficial. It allays the fever and quiets nervousness.

During pustulation antiseptics should be added to the water, as Salicylic Acid, Potassium Permanganate or Carbolic Acid. They allay itching, keep the parts clean and in a measure prevent pitting. In this stage the wash should be used several times a day, thus keeping the parts moist and aiding desiccation.

After desiccation is complete the patient should have several baths with hot water and Carbolic Soap before commingling with others. The eyes should be carefully watched for any complications.

Granting our previous proposition for the treatment of the fever, we place the patient upon Aconite, when the pulse is small and frequent, temperature elevated.

Asclepias is a good diaphoretic. Its indications are cough, pleuritic pain, dry constricted skin. It is also of good service in complications involving the pleura or lungs, or when the eruption has receded.

Belladonna, if the patient is dull and torpid and inclined to coma, the face blue, and congestion. Among the remedies to bring the eruption to the surface, when it is tardy, there are none better than Belladonna.

Bryonia will be found an excellent remedy when the patient complains of pains in the chest, with severe cough, or uneasiness in the bowels, with tenderness, or pain in the articulations. The pulse is hard and vibritile, right cheek flushed, dull pain in the head. It is also the remedy for complications involving the lungs, pleura or joints.

Baptisia. — In some very severe cases Baptisia will be indicated from the commencement. The full leaden or purplish face, like one who has been exposed to severe

cold, is the best indication for the remedy. Sometimes the patient shows this fullness and unpleasant color over the entire surface, and even the mucous membranes will bear the tint.

Calcium Sulphide is useful in the suppurative stage. It is indicated by glandular, nodular or pustular suppurative diseases.

Echinacea, one of our newer remedies, is indicated by the offensive odor of the breath, dusky colored membranes, profuse acrid saliva, tendency to gangrene and sloughing.

Gelsemium, if there is much irritation of the nervous centers, with determination of blood, as shown by the flushed face, bright eyes and contracted pupils.

Macrotys.—The most pronounced symptom in the first stage of smallpox is the severe pain. Macrotys has been employed for half a century in the relief of these cases, and so marked is its action that many have called it a specific in smallpox. Its indications are muscular pains in the back and limbs.

Potassium Chlorate will sometimes be indicated in smallpox, but in this, as in other cases, we follow our nose—the bad odor being the indication. We use it internally, and as a gargle or wash for the sore throat.

Rhus Tox. will be indicated by burning pain, by pain in the forehead, and also by pain in the neck and occiput, the tissues being very sore when pressed; also in retrocession of the eruption, where the patient is restless, uneasy and wakeful.

Serpentaria, to hasten a tardy eruption, or restore one that has receded. It is indicated by a sensation of weight and dragging in the loins and scanty secretion of urine.

Sodium Sulphite.—If the disease shows evidence of a septic condition of the blood, no class of remedies will give better results than the Sulphites. The Sodium Sulphite is probably the best, and may be used freely, the indication

being a broad, pallid tongue, coated with a dirty white fur. It is also used as a gargle or wash for the throat, or by spray.

Sulphurous Acid.—If the tongue is red, moist and covered with a glutinous nastiness like fecal matter, Sulphurous Acid will be the remedy, giving it in teaspoonful doses every three hours.

In convalescence it will be necessary to support the strength of the patient by the use of the bitter tonics and Iron. Quinine with Hydrastine, in doses of one-half grain, is generally our best prescription, when the pulse is soft and open, tongue clean. This may be aided by the Tinct. Muriate Iron with Glycerine. When the mucous membranes present a dark-red or dusky appearance, the dilute Muriatic Acid will answer the best purpose.

VACCINA — VACCINATION.

Vaccina is a general disease, induced in man by inoculation with the virus obtained either from the cow (bovine virus) or from a person who has been previously inoculated (humanized virus).

The vaccine disease, or cowpox, as a prophylactic against smallpox, was discovered about the year 1775 by Dr. Jenner, though he did not publish it until 1798. He noticed, while first studying medicine, that in the dairy districts of Gloucestershire, there was a current opinion that persons who had been affected with a peculiar eruption known as cowpox were protected against the contagion of smallpox, and might go among it and nurse persons affected with it, with perfect immunity. It was not until 1796, however, that he became sufficiently convinced to attempt the propagation of the disease by inoculation, or, as we say, by vaccination.

The value of vaccination as a protection against smallpox is a well-attested fact in medicine, although the nature

of the protection is not well understood. How long the protection lasts from a single vaccination it is impossible to state. The best rule to follow is to vaccinate in childhood, at puberty, and thereafter whenever the locality is threatened with an epidemic of smallpox.

How young vaccination can be performed is questionable. Some claim the constitutional reaction is less the younger the child. We have vaccinated in infancy, the only contraindication being the health of the infant.

In recent years the humanized virus has been replaced by the bovine. The facility with which the latter can be procured fresh, and the freedom from danger of contamination with constitutional diseases, make it preferable. It is usually procured dried on ivory points or in hermetically sealed tubes.

A very simple and good method of vaccination is, exposing the left arm at the insertion of the deltoid, or in girls, when requested by fond mothers, on the outer side of the calf. Wash with soap and water, dry, then wash with Alcohol. The skin is then made tense. With a scalpel the epidermis is abraded until the serum exudes. Too much bleeding is to be avoided, else the virus will be washed off. Some operators use a new cambric needle, and make three or four scratches a quarter of an inch long, and cross these with as many more, using a new needle for each case. The former method is the one we employ. The ivory point is then moistened with water and the lymph thoroughly rubbed into the wound, letting it dry by exposure to the air before the sleeve is drawn down.

Formation of the Vaccine Vesicle. — As a general rule, the puncture disappears the second day, but about the fourth or fifth day a minute inflamed spot is seen. This gradually increases in size, and is swollen and hardened, and forms the base of the vesicle, which is seen first about the sixth day. At first it is spherical and filled with a transparent,

limpid fluid, but as it increases in size it becomes flattened and when it attains maturity the center is lower than the circumference.

It requires twelve or fifteen days from vaccination for the full development of the vesicle, which now presents the following appearance: It is irregular in its outline, being usually ovoid, though sometimes circular in form. The vesicle is uniform in its elevation, usually about one-eighth of an inch, is flattened, or even depressed at the center, and has a peculiar pearly-gray color. It stands upon an indurated and inflamed base, which forms a red areola of from half an inch to an inch outside of the vesicle.

About the twelfth day of the vesicle desiccation commences, and in four or five days is complete, though the scale or scab is not loosened for some time.

The scar left by vaccination is peculiar, yet is simulated by spurious vaccination. It remains white, the skin seeming to be deprived of its rete mucosum or colored layer, is depressed, the outlines being clean-cut and well defined, and presents many little pits or depressions into the true skin.

Generally there is slight febrile reaction about the eighth day, when the vesicle has attained its maturity. Occasionally there is a marked chill, nausea and vomiting, anorexia, restlessness and loss of sleep, and the child is quite sick. Sometimes the irritation of the arm extends to the axillary glands, and these become enlarged and painful, and in some exceptional cases they have been known to suppurate.

Occasionally two vesicles occur; they coalesce. The inflammation then extends deeply into the subcutaneous tissue; there is suppuration, sloughing, and a deep ulcer results, to be healed by granulation.

Eruptions frequently occur. They
urticarial, erythematous and ro-
one most frequently encoun-

ses:

general on the body as to resemble a case of measles. Constitutional symptoms accompany these eruptions.

From infection of the wound furunculosis, cellulitis or erysipelas may result. We have met the latter.

The treatment of these complications will be the same as under any other circumstances. The treatment of the vaccination consists in protection of the wound from injury and the exercise of cleanliness.

VARICELLA.

Varicella, or chicken pox, is an acute contagious disease, characterized by a cutaneous eruption of vesicles and by mild constitutional symptoms, and rarely accompanied by serious complications or sequelæ.

Etiology. — It is claimed the contagium of varicella is contained in the vesicles. Essentially a disease of childhood, it affects children of all ages, the majority of cases occurring between the second and the sixth year.

It prevails in epidemics, and is contracted by exposure to another case, or, probably, rarely through the medium of a third person. It is very contagious, in this respect resembling measles. One attack is, as a rule, protective. The period of incubation is between ten and sixteen days.

Symptoms. — There is no well-recognized prodromal stage, though there is usually a slight fever and a general indisposition for twenty-four hours before the eruption. There may be a slight chill and some fever, or occasionally vomiting, with pain in the back and legs. In other cases the appearance of the eruption may be the first symptom. The eruption usually appears within the first twenty-four hours, first upon the scalp and face, or upon the back and chest. It appears as small, red and widely scattered papules, which spread slowly over the trunk and extremities. A transparent vesicle appears at the apex of these

papules, which at the end of thirty-six or forty-eight hours become purulent. During the first two or three days fresh crops of these vesicles appear, and as the earlier ones dry before they appear, the eruption may be seen in all its stages of development on the fourth or fifth day, which fact is a diagnostic feature of the disease. The vesicles dry up from the center, which causes a slight depression and gives to them an umbilicated appearance. Crusts form, which drop off in five or six days.

As a rule, no mark is left, but in severe cases, when the true skin is involved, scars may remain.

Pustules may form in consequence of irritation by scratching, which may also result in scarring. The temperature, which ranges from 101° to 103° F., is usually highest when the eruption is appearing most rapidly.

Complications and sequelæ are rare. Erysipelas may result as a consequence of scratching with unclean hands. Adenitis and abscesses of the cellular tissue are occasionally seen.

DIAGNOSIS. — The diagnosis is made by the mild constitutional symptoms, the early appearance of the vesicles and their slowness of eruption; their appearance in crops, so that papules, vesicles and crusts are seen in close proximity. The disease for which it is most apt to be taken is varioloid. This latter is to be distinguished by the prodromal symptoms and the greater rise of temperature, as well as the peculiarity of the eruption already noted.

PROGNOSIS. — It is always favorable. Only rarely, in complicated cases, are grave results to be feared.

TREATMENT. — Isolation should be enforced from schools. In private practice quarantine is usually unnecessary. The child should be placed in bed for a few days and sponged daily with a weak solution of Carbolic Acid, or a solution of Sodium Bicarbonate. To relieve the itch-

ing, Carbolized Vaseline or a mixture of Bismuth Sub-nitrate, Glycerine and Rose Water may be applied externally.

The constitutional symptoms are so mild, internal remedies are frequently uncalled for. Those most frequently indicated are:

Aconite, pulse small and frequent, elevated temperature.

Asclepias, when the skin is dry and constricted; cough and pleuritic pain.

Belladonna, drowsiness, dilated pupils, impaired capillary circulation or congestion.,

Eupatorium Perf., full pulse, flushed skin, inclined to moisture. Pains in the chest, hoarseness and shortness of breath.

Gelsemium, bright eyes, contracted pupils, flushed face, nervousness.

RUBEOLA.

Rubeola, measles or morbilli, is an acute, highly contagious disease, whose chief characteristics are: an initial acute coryza, followed by a maculo-papular eruption, appearing first upon the face and spreading to other parts of the body.

ETIOLOGY.—Measles is highly contagious, and during an epidemic few persons escape, unless protected by a previous attack. Neither does a previous attack always render one immune. The contagium is unknown. The poison, however, possesses remarkable power of diffusion, only a short exposure being required for contamination. Though a disease of childhood, it may occur at any age, though not frequent in young infants, and becomes more dangerous as the person is advanced in years. It is propagated by contact or by breathing an atmosphere impregnated with the poison.

It is said to be contagious in the beginning of the

catarrhal symptoms. The period of greatest danger is coincident with the highest temperature and full development of the eruption, subsiding with the fading eruption.

The period of incubation is eleven to fourteen days.

PATHOLOGY.—Measles rarely kills and presents no characteristic post-mortem changes. In those cases proving fatal, the changes found are those peculiar to the complication causing death. These are usually broncho-pneumonia, capillary bronchitis or lobar pneumonia.

The constant lesions peculiar to measles are those of the skin and mucous membranes of the air passages.

That of the skin is an intense hyperæmia and inflammation. As a result of the inflammation there is a congestion and exudation, causing swelling. The lesion of the air passages is a catarrhal inflammation affecting the nose, pharynx, larynx, trachea and larger bronchial tubes, and in severe cases even the smaller bronchial tubes and air vesicles.

SYMPTOMS.—From seven to fourteen days after exposure the disease is ushered in with a chill, sometimes slight, at others amounting to a rigor. For a day or two before this the child manifests catarrhal symptoms, has a slight cough, and may complain of pain in the head and back. Following the chill febrile reaction comes up, but varies greatly in different cases. In some it is quite active, with a flushed, hot skin, frequent, full, hard pulse, and considerable irritability of the nervous system.

In all cases the catarrhal symptoms are so prominent and constant as to be regarded as pathognomonic. About the time of the chill the child seems to have taken a severe cold and sneezes frequently. Stuffing up of the nose, with increased secretion and discharge, redness and watering of the eyes, increased sensibility to light, hoarseness, and a troublesome dry bronchial cough are common symptoms.

The febrile reaction continues to increase gradually until the second, third or fourth day, then declines after the eruption has fully made its appearance. The eruption comes out first on the face, neck and breast, then on the rest of the trunk, and finally upon the extremities. The single point of eruption is much the color of a mosquito bite, ovoid or irregular in form, especially irregular in its border, and the color is gradually shaded off to the color of the skin. The points of eruption generally coalesce, so as to present larger patches or blotches. In very severe cases the whole surface will be thus covered, so as to present but little of sound skin. The eruption is slightly elevated, and rough when the finger is passed over it, and pressure momentarily removes the color.

It requires from twenty-four to seventy-two hours for the full appearance of the eruption. It retains about the same degree of redness for one or two days, and then slowly declines in the order in which it appeared, so that about the sixth to the ninth day from the chill it has passed away.

During the one, two or three days in which the eruption is coming upon the surface the fever is higher than before, and sometimes the little patient is quite sick, even in the ordinary form of the disease. Then it declines, sometimes slowly, reappearing at times until the efflorescence has entirely passed away; at others, the little patient will be free from it in the course of a day.

With the appearance of the eruption in some cases the bronchial irritation and cough are markedly increased, and become very troublesome. There is also more or less difficulty of breathing, which sometimes depends upon determination to, or congestion of, the bronchial tubes, and at others upon similar lesions of the parenchyma of the lungs. The part affected, and also the character of the lesion, may be determined by physical examination.

Measles prevail with varying degrees of severity, from the very mild to the most malignant.

In one class of cases the eruption is tardy in its appearance; the fever running a pretty active course, with considerable bronchial disturbance, the third, fourth, fifth or sixth day passes without its full appearance. The surface seems slightly swollen and flushed, and in some places the eruption is seen indistinct, as if struggling to make its appearance. In others it may be confluent.

In another class of cases the symptoms of malignancy are manifested early in the disease. The pulse is smaller and faster, the temperature high, the skin flushed, but dry and husky, and the tongue covered with a dirty fur, with a tinge of brown. The nervous system suffers especially in these cases. In some there is great excitement for the first day or two, even delirium, or occasionally convulsions, afterwards coma. But in the majority of cases dullness and hebetude are marked symptoms, the child dozes with its eyes partly open, and early coma comes on and gradually increases until the child can not be aroused.

In all of these severe cases the eruption is more or less dusky, or scarcely makes its appearance, and we may judge very closely of the severity of the disease by this. It will also be a guide in the treatment. Means that brighten the color of the eruption are beneficial, but if the duskiness increases, we may be satisfied that our treatment is productive of no benefit.

There may be a retrocession of the eruption of measles at any time after it has appeared. In the milder form of the disease this increases the fever and the bronchial irritation, and though unpleasant, is not dangerous. But in other cases we will find the nervous system *suffering* severely from the retrocession, and if it *c* blood also becomes impaired. In these *c* stupor and coma follow one another *rav*

dusky, the temperature increased, and the tongue soon becomes brown, and sordes appear upon the teeth. These symptoms are of a grave character, and unless prompt means are employed to bring the eruption again upon the surface, it may terminate fatally in a short time.

The most frequent complication of measles is a bronchopneumonia. There is always some bronchitis present, but it may extend to the smaller bronchial tubes and air vesicles, causing a broncho-pneumonia. In summer we may have diarrhoea, or in severe cases an ileo-colitis.

Whilst some cases are complicated by an otitis, measles is not so destructive to the hearing as is scarlatina. In children under two years of age the lungs are the source of greatest danger.

Chronic conjunctivitis is another common sequel.

DIAGNOSIS.—The marked catarrhal symptoms is the principal diagnostic feature in the early stage of this disease, as the severe pain is in small-pox, and the sore throat in scarlet fever. We distinguish the eruption by its irregular form, coalescing in blotches, appearing first upon the neck and face, then extending to the body and extremities. An examination of the throat will at times reveal spots upon the hard palate, previous to its appearance upon the face.

PROGNOSIS.—The prognosis will depend upon the age and previous condition of the patient, the character of the epidemic and season of the year. Except in children under three years of age, there are but few deaths caused from measles. Unfavorable symptoms are, a late appearance of the eruption, a scanty or hemorrhagic eruption, a sudden recession, or a temperature remaining high after the full appearance of the eruption.

TREATMENT.—Although the laity views measles with considerable indifference, owing to its complications care

should be taken to protect the younger children from exposure as well as those predisposed to pulmonary affections.

The patient should be placed in bed in a well ventilated room, which should be darkened to protect the eyes. He should be lightly covered and allowed cold drinks and kept quiet until convalescent. Though the room does not require the thorough cleansing as in scarlatina or diphtheria, it should, however, be disinfected and aired before being occupied by other children. The period required for isolation in measles is said to be four weeks from the beginning of catarrhal symptoms. When conjunctivitis is severe, iced or cold cloths should be placed over the eyes, a wash of Boracic Acid used, and the lids anointed with Vaseline, to prevent them agglutinating.

To allay the itching and burning coincident with the eruption, we use an inunction of Carbolized Vaseline. The same inunction is used during desquamation. Baths are at all times agreeable and quieting. During the eruptive period a bath of Soda Water, followed by the inunction, is used at least once daily. Should the eruption recede and the extremities become cold, the pulse feeble, stimulants should be given internally, and a hot mustard bath used.

Though we are told measles is a self-limited disease and we can not shorten its duration, we can at least mitigate its symptoms and attempt to ward off complications. We consequently prescribe our internal remedies, as follows:

Aconite.—Pulse small, sharp and quick, skin dry and hot, secretions suppressed. It has a direct influence upon the capillary circulation and assists in determining the eruption.

Asclepias is a favorite in all the exanthematous diseases. Cough, pleuritic pain, dry, constricted skin. It is of good service in those cases where the eruption is tardy or receded.

Belladonna in malignant rubeola will relieve the stupor and tendency to coma. A considerable experience has given me great confidence in Belladonna as a specific against congestion, especially of the nervous system.

Bryonia. — Dusky flushing of the cheeks, especially the right. Pain in the right side of face and head, burning in the eyes and nose. Pleuritic pains. Pulse full and hard. It is the remedy in pulmonary complications.

Drosera, if the cough is very troublesome. It is expulsive, uncontrollable and irritating, with dryness of the air passages and pleuritic pain. If there is anything specific in medicine, it will be found in the use of *Drosera* in the cough of measles and in whooping cough.

Gelsemium. — Bright eyes, contracted pupils, flushed face, restlessness and irritation. Tendency to convulsions.

Lobelia. — Full and oppressed pulse, nausea, dyspnoea, dry, harsh cough. It is the remedy when there is a considerable degree of bronchial irritation, or it has passed into an actual inflammation.

Rhus Tox., in those cases where the patient is very restless, starting in sleep, with shrill cry, and we fear convulsions. The pulse is small and sharp, and the skin dry, contracted and burning. There is great injection of the conjunctiva, swelling of the palpebræ, extreme lachrymation and photophobia.

To antagonize the septic condition of the blood, either of these remedies may be indicated: Sodium Sulphite, if the tongue is broad, pallid and dirty; Sulphurous Acid, if it is deep-red and moist, and covered with a glutinous nastiness; Muriatic Acid, if it is deep-red, contracted, dry, and covered with a brown coat: *Baptisia*, if the patient shows that full livid face as of one exposed to severe cold; and Potassium Chlorate, if we have the peculiar odor as from *cynanche maligna*.

When the lungs are involved, either as the result of

bronchitis or of pneumonia, we use a cloth spread with lard and sprinkled with the Emetic Powder, or the cotton jacket.

Much care is required after the disease has subsided in order to confirm convalescence. The clothing should be warm, and the child not permitted to expose itself to draughts of air.

RUBELLA.

Rubella, German measles, French measles or Rotheln, as it is indifferently called, is an acute contagious disease characterized by a slight fever, mild indefinite symptoms, but a well-marked eruption of a variable appearance.

Etiology.—Rubella is beyond doubt a contagious disease, communicable at any time during its course. It spreads rapidly by means of the cutaneous exhalations, breath, fomites and clothing. It is more prone to become epidemic than either measles or scarlatina, and the occurrence of either of these is no protection. It is a disease of childhood; all ages are liable, and sex is not an etiological factor. Its period of incubation is variously estimated at from ten to twelve days.

Symptoms.—The period of invasion is mild, rarely extending over from a half a day to a day, although some say it may last as long as three days. In mild cases there may be no antecedent symptoms, the rash being the first noted. Among the symptoms preceding the rash may be chilliness, headache, languor, faintness, vomiting, feverishness, pains in the back and limbs, sore throat, enlarged cervical, submaxillary and auricular glands. At times there may be some coryza, with suffusion of the eyes, constriction of the chest, and cough. In our own experience the sore throat, with enlargement and induration of the glands, is the most constant prodromal symptom.

The temperature is not, as a rule, high and is not per-

sistent, ranging from 100° F. to 103° F., and is coincident with the eruption.

The rash, if not the first symptom, will make its appearance first upon the neck and chest, and then extend rapidly downward, spreading over the entire body, the lower extremities last. Some authors claim that it makes its appearance upon the face first, and from thence extends downward. The rash is multiform, of a rosy or pale red color. It is punctated and slightly elevated, so as to produce a roughness when the hand is passed over the surface of the skin. It fades upon the part where it first appeared, while reaching its height upon another; in other words, it fades in the order of its appearance. Its duration is from two to five days. A slight desquamation usually follows, and a brownish pigmentation of the skin has been noticed.

In some epidemics the rash has occurred in irregular blotches, resembling measles, whilst in others it is more of a uniform red blush, as in scarlatina.

Complications and sequelæ are rare. Those that have been reported are generally of the respiratory apparatus, as bronchitis, pneumonia or pharyngitis. Albuminuria and nephritis are rare.

DIAGNOSIS. — The diagnosis is at times extremely difficult. The characteristic points are the mildness of the prodromal symptoms and of the fever, the diffuse rose-red rash, with early enlargement of the cervical glands.

From measles it is distinguished by the less severe onset, light color of the rash and its irregular shape; from scarlatina by the low temperature, rapid appearance of the eruption and decline of the fever.

PROGNOSIS. — The prognosis is nearly always favorable; in fact, there are few diseases so free from danger, and a fatal termination is rarely seen in private practice.

TREATMENT.—Owing to its mildness, many cases escape unnoticed. Because of the difficulty of forming a correct diagnosis, isolation should be enforced to protect the family. A mild scarlatina so closely resembles rubella that errors of judgment may easily be made; hence precaution is necessary.

The treatment will consist of sponging with an alkaline solution such as has been previously recommended, followed by the inunction of Carbolized Vaseline. Internally we may give—

Aconite, when there is high temperature and the rapid, sharp pulse.

Asclepias, if the skin be dry and harsh and the eruption seems tardy in making its appearance.

Belladonna, when there is dullness of the intellect and the pupils dilated, duskiness of the skin, showing evidences of congestion and a tardy eruption.

Phytolacca will be called for by the sore throat and swelling of the glands.

Rhus Tox., when the child cries out sharp and shrill, arousing from its sleep with a start, jerking in its sleep, and there is itching and burning of the skin.

SCARLATINA.

Scarlatina is an acute contagious disease characterized by an angina, variable in intensity, a fever, and, in from twelve to twenty-four hours, by a diffuse punctiform scarlet eruption, followed by desquamation.

ETIOLOGY.—Scarlatina occurs sporadically and epidemically, the latter varying in intensity. It may be communicated from the period of invasion until desquamation is complete, and, it is claimed, even during a purulent discharge from the nose or ear. Therefore, the danger of infection only ceases when the health is fully restored. It

is propagated by a specific contagium, and the virus is said to exist in the throat, excretions and the epidermal scales thrown off from the body.

It is both volatile and portable, and may be conveyed in clothing, furniture, toys, books, etc. The chief source of infection is, however, the patient himself. Age is the most predisposing factor, the most cases occurring before the tenth year. The susceptibility is not great in early infancy, and steadily diminishes after the tenth year, although adults are not entirely exempt. The age of greatest susceptibility is from the second to the tenth year. Sex and race have no influence. The seasons apparently have, as it is most frequent in the fall and winter. The period of incubation is from three to twelve days.

PATHOLOGY. — The morbid changes found in scarlatina consist mainly of those of the skin, subcutaneous connective tissue and the mucous membrane of the throat and nasal cavities. Those found in the internal organs are due to complications and sequelæ.

The lesion of the skin is an acute dermatitis. As a result of the inflammation there is an hyperæmia with dilatation of the small blood-vessels, then an exudation and infiltration of leucocytes into the papillary and subpapillary stratum, as a result of which there is swelling and cedema.

The acute inflammation is followed by an increased production of epithelium, death of the cells, and the throwing off of the superficial layers by desquamation.

When death occurs early in the disease, from the throat lesion or from complications of the internal viscera, the exanthem is rarely visible in post mortems, though it may in some malignant types make its appearance where it has been invisible before, and thus assist in diagnosis.

The other lesions peculiar to scarlatina are the angina and nephritis. The former varies from an hyperæmia and

swelling of the mucosa of the tonsils, palate and pharynx to a membranous angina, and occasionally gangrene.

SYMPTOMS.—Scarlatina has been divided into three forms: S. Simplex, S. Anginosa, and S. Maligna, differing in their intensity, severity of symptoms and fatality. We prefer the division into regular, irregular and malignant types.

The invasion, as a rule, is abrupt, and is in proportion to the severity of the attack. The most frequent symptoms are a chill (not always well defined), vomiting, a rapid, wiry pulse (140 to 160, out of proportion to the temperature), and a rapid rise of temperature (frequently as high as 104° to 105° F.), and a sore throat. In young children convulsions are quite common. Inspection of the throat reveals an erythematous blush covering the pharynx, tonsils and fauces, and red points upon the hard palate. At times membranous patches are seen upon the tonsils. The sore throat is a constant and characteristic symptom, beginning with the onset of the disease and progressing with the development of the exanthem. There is also swelling of the cervical glands.

Within twelve to thirty-six hours, although it may be exceptionally delayed until the third or even the fifth day, the rash appears first upon the neck and chest and extending rapidly over the entire trunk and extremities, reaching its maximum at times within four or five hours, though it may be two or three days before the entire body will be covered. The average time is within twelve to twenty-four hours.

Examined closely, the rash is seen to consist of a multitude of red points, surrounded by an erythematous blush, which, joining, gives the diffuse redness to the entire skin, and which contrasts strongly with the peculiar pallor about the mouth and chin. Pressure with the fingers causes a pallor of the skin, which soon disappears upon the removal

of the finger. The rash usually lasts from three to seven days.

Variations in the eruption are quite frequent and often puzzling. In mild cases it is often not seen upon the face, and may be quite faint upon the body, whilst in severe cases irregularities are seen as to its time, appearance and character. When the eruption is at its height there is an intense itching and burning of the surface. The tongue is red at the tip and edges and coated with a white fur in the center, the enlarged papillæ projecting through this coating. In a few days this coating disappears and the surface assumes the characteristic appearance known as the "strawberry tongue." The urine is scanty, thick and contains a small amount of albumen. Shortly after the rash has faded the epidermis becomes rough, and desquamation begins first upon the neck and fingers, and then upon the various parts in the order in which the eruption appeared. The degree and character of the desquamation bear some relation to the severity of the attack, and are more characteristic of the disease than the rash itself, and is conclusive evidence of scarlet fever in those mild cases where the symptoms were obscure. The desquamation lasts from one to three weeks, being longest upon those parts where the epidermis is thickest, as upon the hands and feet. In many cases of scarlet fever all the premonitory symptoms are absent, the rash only being present. In such cases care is necessary that the disease be not mistaken for some other eruptive condition. In such cases the desquamation clears the diagnosis. These cases are to be dreaded, as, owing to lack of care or precaution, severe nephritis may follow them just as well as in the severer cases. In malignant cases death usually occurs within the first week.

In malignant cases membranous patches appear upon the tonsils and spread rapidly to other parts of the throat.

The cervical glands rapidly swell, and the temperature remains steadfastly high, even as high as 106° or 107° F. In these cases the child becomes overwhelmed with the poison, and the symptoms become typhoidal in character. The child is dull and stupid and frequently cyanotic. Diarrhea is frequently a troublesome factor.

The neck becomes enormously enlarged from the swelling of the glands and the cellulitis present. The skin is waxy and livid and the extremities cold. Ulceration of the tonsils is a frequent occurrence. Their surface becomes foul, and there is a strong tendency to sloughing. In such cases the lungs may become the seat of a septic pneumonia. A general septicæmia may occur, or should the child escape this, there is still danger of an otitis or an acute nephritis.

Complications and Sequelæ: Complications are frequent, the most common being otitis. There is probably no disease of childhood that causes more cases of deaf-mutism than scarlatina. The otitis is caused by the inflammation extending from the throat through the eustachian tube into the middle ear, and subsequent suppuration and rupture of the drum. This trouble may occur during the fever or during convalescence. It is also one of the most common causes of a continued high temperature. Either one or both ears may be affected.

Adenitis is frequent. The glands of the neck swell and at times suppurate. Cellulitis may also occur. Pyæmia may result, as depicted in describing malignant scarlatina. The tonsils may be the seat of deep ulceration and sloughing. Septic pneumonia may result, as may also bronchopneumonia. Rheumatism is another common complication. The wrist and finger joints are those most frequently attacked, though the knee joints may be severely affected. It is said this is not a true rheumatism, but is more properly a synovitis or arthritis. Nephritis is the most impor-

tant complication of scarlatina, as well as the source of greatest anxiety. An otherwise mild case may soon be changed into a doubtful and grave one by the supervention of an attack of acute nephritis. During the height of the fever there is usually a trace of albumen in the urine, which is of no special significance. The post-scarlatinal nephritis occurs between the second and fourth weeks, usually while desquamation is in progress. It begins insidiously. The patient, who has probably been doing well, grows restless, is feverish and has a quick pulse. The urine grows scanty, dark colored or smoky, and contains large quantities of albumen. The face becomes pale and puffy, and there is œdema of the feet and scrotum. In favorable cases the amount of urine gradually increases and the child becomes convalescent. In unfavorable ones, the symptoms deepen, the dropsy increases, the urine decreases in quantity, and uræmia and convulsions ensue. Vomiting and diarrhoea are frequent, as well as epistaxis and hemorrhages from the mucous surfaces. Heart changes are frequent and are to be looked for in all cases of nephritis. They are the cause of many cases of sudden death.

DIAGNOSIS. — Scarlet fever is diagnosed by the abrupt onset, marked elevation of temperature, sore throat, and the appearance of the rose-colored efflorescence upon which are the innumerable small red points within twenty-four hours. The difficulties of diagnosis are with the irregular and malignant types.

The irregular types are to be distinguished from rubella, measles and dermatitis caused by certain drugs. The distinction between the eruption of rubella and scarlatina is difficult. The important distinction is that, though the rash of the former may be well developed, the constitutional symptoms are wanting. The typical eruptions of measles and scarlatina have little in common. The former usually begins on the face, spreads slowly over the body.

The marked catarrhal symptoms of the former are also diagnostic. With the drug eruptions we depend upon the history and constitutional symptoms.

PROGNOSIS. — The prognosis varies considerably in different epidemics. It is most fatal in the youngest infants, and grows less so as age advances. In children under five its mortality is said to be from twenty to thirty per cent. While the prognosis is favorable in the simple and regular forms, yet the mildest-appearing case may be suddenly changed into a grave one by the occurrence of nephritis.

The causes of death may be divided into three groups: First, those due to a late nephritis; second, the septic cases, characterized by an ulceration of the tonsils, and dying in the second or third week from pneumonia, pleurisy or exhaustion; third, the malignant cases, who succumb in the first two or three days.

TREATMENT. — In the treatment of scarlatina, as in the other infectious diseases, our first care is the protection of the well. Every case should be isolated in a well-ventilated upper room, if possible. The room should be previously prepared by having every unnecessary article of furniture, curtains, etc., removed. The nurse should wear a dress made of material easily washed, and should refrain from mingling with the balance of the family. Even the mildest cases should be isolated from five to six weeks, or until desquamation is complete. Should there be any complications, the isolation should be continued until they are cured. The child, before being allowed to mingle with other children, should have a thorough scrubbing daily for several days previous, the hair cut and the head scrubbed, and no clothing used that had been worn by the patient while sick. The room should be fumigated by burning sulphur, then thoroughly cleansed. If papered, the paper should be removed and the walls repapered. All clothing used should be boiled and exposed to the sunlight

and air out of doors for several days. All material used for cleansing the mouth and nose should be burned.

No matter how mild the disease, the patient should be placed in bed and kept there at least a week after the fever has subsided. This precaution is important as a preventive of nephritis. The alkaline bath is used sufficiently often to keep down the heat of the skin, and render it soft and pliable; or a solution of Carbolic Acid may be used. If the skin is inactive, the bath may be hot. Sponging the child with water as hot as can be borne stimulates the capillary circulation and brings the eruption to the surface. Generally we will find that these means relieve the irritation, lessen the fever and bring the eruption out early. The bath is immediately followed by an inunction of Vaseline and Creosote. In place of Creosote, Ichthyol or Carbolic Acid may be used.

The disease of the throat, which is one of the most prominent features, will demand much attention.

In many cases the treatment will consist of the use of occasional inhalations of one part of vinegar to three of water, and a flannel wrung out of equal parts of vinegar and water and applied around the throat, with a dry flannel over it. This may be changed every half hour or hour, and as the disease subsides may be replaced with a dry flannel. In some cases no other application to the throat is necessary.

The inhalation also offers one of the best local applications to the affected mucous-surface. The simple inhalation of the vapor of water, or of water and vinegar, or an infusion of hops, of German Chamomile or Garden Tansy, will give great relief, and, repeated every two, three or four hours, will often be sufficient. When additional remedies are deemed necessary, they can be prepared in powder with Gum Arabic and Sugar, and allowed to slowly dissolve upon the tongue. We may thus use Potassium

Chlorate, Ammonium Hydrochlorate, Sodium Sulphite, Borax, Alum, etc Used in this way, they relieve dryness of the throat, and the constant desire to swallow, which is so unpleasant.

If the throat is tumid and dusky, or is ulcerated and sloughy, Boracic Acid, Thymol or Echafolta in solution will be found an excellent application. The Sulphurous Acid, one part to four of water, is also very good when used with the spray apparatus.

In the selection of our remedies it is well to have some well-defined line of action — to determine exactly how we can benefit our patient. We know by experience that the higher the fever, and the longer it continues before the appearance of the eruption, the greater the danger, and that the case also becomes critical in proportion to the amount of eruption and the arrest of secretion. Thus, in all cases, it is good practice to use such means as will control the primary fever and favor the early appearance of the eruption.

We put the patient upon the use of Aconite when there is a hot, dry skin, excited circulation, the pulse small and frequent, and marked febrile action.

Alcohol or alcoholic stimulants are called for when there is a weak and feeble pulse, weakened first sound of the heart, hurried respiration and prostration. They are principally used in malignant cases when the throat symptoms resemble diphtheria, and in marked septic infection.

Apis, owing to its influence on the skin, will be indicated by itching of the surface and pinkish coloration of the face. There is a tendency to retention and the urine is scanty, voided with burning and smarting of the urethra; œdema.

Apocynum, upon the first intimation of dropsy. Usually we will note its appearance in a swelling of the upper eyelids. The indications calling for it are, therefore, swollen eyelids, œdematosus feet, scanty urine, albuminuria. It is

one of our best remedies in dropsy following scarlatina, used either alone or in combination with other indicated remedies.

Asclepias is a good diaphoretic, to be given when the skin is dry and the eruption is slow in making its appearance. It is also valuable should there be any lung complications, pleuritic pains and cough.

Baptisia will be suggested by the full face, somewhat dusky, and by duskiness of the eruption, dusky coloration of face, surface, tongue and throat. It may be used internally, as a gargle or by a spray apparatus.

Belladonna is especially serviceable in scarlatina. It is indicated by mental dullness and inactivity, dull eyes with dilated pupils, eyes partly open when asleep, skin cool and relaxed, full and oppressed pulse. It is the remedy for congestion; therefore it assists in determining the eruption to the surface, whether it be slow or the result of retrocession. It is also valuable in the renal hyperæmia or nephritis following scarlatina.

Calcium Sulphide is indicated by suppuration. It is useful late in the disease, when there is suppuration of the middle ear or lymphatic glands.

Digitalis is valuable in the dropsy following scarlatina, when the heart is feeble, breathing difficult and distressing, jugular veins enlarged, face pale or dusky, urine high-colored and scanty, pulse frequent, fluttering and irregular.

Echafolta is one of our newer remedies for septic conditions. It will be found useful in those cases attended with ulceration of the tonsils or suppuration of the glands, with septic infection. It is indicated where there is a tendency to gangrenous states and sloughing of the soft tissues; the throat is dark and full; tongue full, with a dirty, dark brown or black coat; in all cases where there is sepsis or zymosis. It is used internally, as well as by a spray, as indicated above.

Elaterium is indicated in those cases of scarlatinal nephritis attended by excessive anasarca and ascites. The pulse is strong, urine scanty, bowels constipated. It is also of value in nephritis attended by uræmic convulsions.

Gelsemium, in cases with marked irritation of the nervous system, with determination of blood to the brain, continuing it until these symptoms have disappeared.

Hydrochloric Acid may be added to the child's drink when the indication is strong — the deep red tongue.

Passiflora is indicated by cerebral irritation, restlessness and insomnia. We find it to be a good child's remedy to induce sleep and quiet nervousness, when there is not much pain.

Phytolacca is indicated by the soreness of mouth and swelling of the cervical lymphatics. If there is a marked tendency to enlargement of the lymphatic glands, we administer Phytolacca, alternated with the remedies that have been named. Phytolacca is an excellent external application.

Potassium Chlorate is indicated by the peculiar fetor, as from cynanche maligna, and may now be used as an internal remedy, as a gargle or as a spray. Caution should be exercised in its use, as it is clearly proven to be an irritant to the kidneys.

Rhus Tex., in cases with the sharp stroke of the pulse, pain in the forehead, starting in the sleep, shrill cry, etc. This remedy is also indicated by burning of the surface, with extreme nervous irritation, and whilst it favors the appearance of the eruption, it promotes functional activity of the skin. There may be also injection of the conjunctiva, swelling of the palpebrae, extreme lachrymation and photophobia.

Serpentaria is useful to restore a receded eruption or to bring out a tardy one, when there is a poor circulation and internal congestion.

Sodium Sulphite, the pallid, dirty tongue.

Sulphurous Acid, the red tongue, with glutinous, dirty coat. This remedy is indicated in a large number of cases, and is not only one of the best for internal administration, but also as a topical application to the throat. In many cases it may be used with a spray apparatus.

Tr. Ferri Chlor. has also been used with advantage in scarlet fever. It is given after the eruption has made its appearance; the combination with Glycerine is the best form, and this may also be used as a gargle. It will also be of advantage during convalescence, and will tend to prevent dropsy and other sequelæ. It is indicated by the deep red color and swelling of the membranes.

Veratrum, pyrexia, pulse full and bounding, in the early stages, either before or during the eruption. The adenitis calls for ice bags to prevent suppuration. If the inflammation terminates in suppuration, antiseptics are used locally, after the evacuation of the pus, and the remedies given internally as indicated.

For the otitis we prefer the application of heat, using the hot-water bottle. It is doubtful if suppuration can be prevented, save only in those cases due to the angina. Paracentesis of the drum is at times called for. The ear should be treated after the paracentesis or rupturing of the drum as in any case of suppurative otitis.

In the treatment of any of the complications or sequelæ, the remedies are chosen on the plan outlined above.

PERTUSSIS — WHOOPING COUGH.

Pertussis is a highly contagious affection, characterized by a catarrhal inflammation of the respiratory tract and a peculiar paroxysmal cough and a long-drawn inspiration during which the cough is produced.

ETIOLOGY. — It is eminently a contagious disease and a

disease of childhood. It arises from a contagium vivum, and as one attack is usually protective against subsequent ones, it is classed with the specific diseases.

The nature of the contagium is unknown. Usually it is contracted only when children are brought in such immediate proximity that the breath or exhalations of the diseased person are inhaled. It prevails as an epidemic, and has become endemic in our larger cities. Age is an important factor, children under two years of age exhibiting a strong predisposition to contract it. Probably one-half of the cases occur in children under two years of age, and nearly all before ten. It exhibits a stronger tendency to affect young infants than any other contagious disease. It is most prevalent in the winter and early spring, and there seems to be a relation existing between it and other specific diseases, most epidemics either preceding or following one of measles or scarlatina. It is said to be communicable from the beginning of the catarrhal stage, but how long it is contagious is uncertain. Its very gradual onset makes it impossible to fix an exact date or to establish a definite duration. The probable period of incubation is from seven to fourteen days.

PATHOLOGY. — Pertussis of itself presents no characteristic lesion. Those found on autopsy are due to the complications which render it fatal. The lesion of the early stage is a catarrhal inflammation affecting the mucous membrane of the larynx, trachea, bronchi, and at times the nose and pharynx. The catarrhal inflammation, under improper surroundings or indiscretion, becomes converted into a bronchitis, or even a broncho-pneumonia—a serious complication. Some emphysema is said to be developed in every serious case. The digestive system may suffer by reason of the prolonged vomiting, proving a troublesome complication and seriously interfering with nutrition. In infants, during the summer months, a catarrhal enteritis

colitis is liable to occur. In all severe attacks there is an increased irritability of the cerebral and spinal centers. Convulsions are liable to occur, either as a result of some temporary cause, or of some serious cerebral lesion. Hemorrhages are not infrequent, epistaxis occurring frequently. Subconjunctival hemorrhages are more rare, and meningeal still less frequent.

SYMPTOMS. — Writers divide pertussis into three stages: the first, the catarrhal, lasting from five to fifteen days, presents the symptoms of ordinary catarrh; the second, the paroxysmal, lasting from three to six weeks, presents the peculiar whoop, which gives name to the cough; and the third, of variable duration, is the period of decline.

Whooping cough manifests itself at first as a simple catarrh, the cough being gradually developed. Some days elapse before there is anything distinctive in it; and it is not usually well marked under from two to four weeks. There is simply a mild catarrhal inflammation of the larynx and trachea, with a slight rise of temperature, loss of appetite, and broken rest at night. The cough seems out of proportion to the physical signs, and is worse at night. The face will be swollen, eyes watery and suffused, and the under lid swollen and pink. The cough gradually grows worse until the second or paroxysmal stage is reached, when we have developed the "whoop" from which the disease derives its name, and which may occasionally be present from the first. The child seems to foresee the oncoming of the paroxysm, and will run to the mother, nurse or something for support during the paroxysm. The cough consists of a series of explosive coughs, variable in number and following each other in quick succession, until the child seems unable to get its breath. The face will become deep red or purple, at times almost black; the veins of the face and scalp stand out prominently, and the eyes are injected and suffused. Then follows the long-

drawn inspiration, accompanied by the characteristic whoop. The whoop is the shrill sound formed as the air is drawn through the yet contracted larynx in the forcible inspiration succeeding the cough. At times the paroxysm may be preceded by a whoop. The paroxysms may be repeated two or three times, and end with the expulsion of a quantity of clear, thick, tenacious mucus, or with vomiting. The most common attendants of the cough are vomiting and epistaxis. The former is almost sure to occur if food has been recently taken. After an attack, if severe, the child seems exhausted, hardly able to stand, its mind is confused and dazed, and its face covered with perspiration. The number of paroxysms in a day varies considerably, depending upon the severity of the attack, and seems to be precipitated by crying, drinking, eating, and draughts of cold air, or by excitement. They appear more frequent at night, and in a close room than in the open air.

In some undoubted cases of the disease the characteristic whoop is absent, nor is the whoop marked in young infants. It is also modified by intercurrent diseases, as pneumonia or bronchitis. In this stage the physiognomy of the child seems changed. The features are swollen, puffy and dusky in color; the eyes injected and bloodshot, the lids swollen and pink, and the skin livid. The average duration of the paroxysmal stage is about one month. Gradually increasing for the first two weeks, it remains stationary about a week, then gradually declines; the paroxysms become less, the whoop disappears, and the cough resembles more nearly a bronchitis.

The most frequent complications are hemorrhages; epistaxis is most common — subconjunctival more rare. meningeal less frequent. The most serious complications are those of the respiratory organs. Emphysema is said to be present to a greater or less extent in all severe cases. Bronchitis of the larger tubes is also frequent. If the

smaller tubes become affected, the prognosis becomes most grave, and especially so if a broncho-pneumonia be developed. These conditions are especially to be dreaded in infancy.

The vomiting at times becomes grave and seriously interferes with nutrition. In the summer season a catarrhal condition of the intestines develops, producing a diarrhoea, which is nearly, if not quite, as serious in infants as the complications of the respiratory organs.

Again, the nervous system may suffer by reason of an increased irritability of the spinal and cerebral systems. Convulsions, more or less extensive paralysis, disturbances of sight and hearing, are among the disturbances of the nervous system.

DIAGNOSIS.—In the first stage pertussis is with difficulty recognized. The spasmodic cough, coupled with the fullness and pinkish color about the eyes, should attract our attention. In the second, the paroxysmal character of the cough, its long continuance without seeming cause, and the peculiar whoop, are sufficient for the diagnosis.

PROGNOSIS.—Pertussis is to be dreaded during the winter and early spring months. While looked upon with indifference by both laity and profession, no disease is more to be dreaded during the first year. The most important factor in the prognosis is age. The fatal results are due to the complications, broncho-pneumonia causing about two-thirds of the deaths, and diarrhoea being next in gravity. After the fourth year serious complications are rare.

TREATMENT.—Probably in no contagious disease is there more indifference exhibited in both prophylaxis and treatment than in pertussis. The laity appear to believe (and the physician is partly to blame for it) that nothing can be accomplished by treatment. Granting it to be a

specific infectious disease, and therefore self-limited, yet as we treat the others so should we treat pertussis. Though we may not succeed in shortening its duration, we can mitigate the severity of the paroxysms and lessen their number. In the general management of the disease care should be exercised as to the clothing and temperature of the rooms, so as to protect the child against cold draughts, cold winds and sudden atmospheric changes. The clothing should be warm, and the room, though warm, should be well ventilated both night and day. Excitement should be avoided and nutrition maintained. The child should be kept from school, and while isolation can not be maintained with the same restrictions as in the other infectious diseases, commingling with other children should be prohibited.

As in other diseases of a like nature, reputed remedies for "whooping cough" are numbered by the score. We select them, as in other diseases, by the predominating symptoms.

Nitric Acid is an old remedy, and a very good one. If the tongue has a violet color, showing over red, the remedy will help whooping cough.

Ammonium Bromide is peculiarly the epileptic remedy, and if our whooping cough shows the peculiar convulsive condition, we expect to relieve with this agent.

Belladonna is also an old and most excellent remedy, but it would not relieve the Nitric Acid cases. When the patient is dull and inclined to sleep (the eyes are dull, the pupils dilated), just as it is the remedy in other diseases showing these symptoms, Belladonna should be used.

Drosera is the remedy for the cough of measles. There is something peculiar about this cough which will be readily recognized, and it is based upon a peculiar catarrhal condition of the mucous membranes. Whooping cough

may show these very conditions, and if so, *Drosera* is the remedy.

Gelsemium is the remedy when there is irritation of the nervous centers and tendency to convulsions. The eyes are bright, pupils contracted, face flushed, determination of blood to the head, nervousness and delirium.

Ipecac is called for when there is vomiting and gastrointestinal irritation, as evidenced by the elongated and pointed tongue. There is a feeling of irritation and burning in the chest, oppressed breathing, violent expulsive cough.

Lobelia in pulmonary complications. These are sibilant rales, a sense of oppression about the chest, full, oppressed pulse.

Sanguinaria, when there is a sense of tightness and constriction in the respiratory passages; dry, hacking cough, burning and tickling in the throat and larynx.

PAROTITIS — MUMPS.

Parotitis is an acute contagious disease characterized by an inflammation and swelling of the parotid gland, and occasionally of the salivary glands; the testicles in the male, and the mammae, ovaries or vulvæ in the females.

Etiology. — Parotitis, or mumps, is caused by a specific contagion, generated during the progress of the disease, propagated by contact, and when a person has had the disease there is subsequent immunity. It is consequently a blood or constitutional disease, with local manifestations. It prevails mostly in the spring or autumn, and is supposed to be communicated through the medium of the breath or exhalations; the greatest source of contagion being the salivary glands.

Children and young adults are most liable to be attacked,

and males more than females. Infants and old people rarely suffer from it.

PATHOLOGY.—Arising from a specific contagion, to which the patient has been exposed, usually by contact, we find the disease manifesting itself in a peculiar inflammation of the parotid gland. We say peculiar, because there is but little exudation of plastic material, and but little tendency to suppuration. In some cases, indeed, it seems but little more than an irritation, with some watery or serous effusion into the tissues. In other cases the inflammatory symptoms are all well developed, and the functions of the gland entirely suspended. Other glandular tissues may be involved. Thus we have a metastasis of the disease to the testes in the male, and to the mammary glands in the female, and we have noticed disease of the thyroid.

SYMPTOMS.—The period of incubation varies from five to twelve days, during which the person has no symptom of the coming trouble. Frequently he will go to bed well, and awake with swelling about the jaws and ears, stiffness of the neck, and when he sits down to his breakfast will find both mastication and deglutition difficult. Acids increase the pain, and a very common domestic means of diagnosis is to have the patient try to eat a pickle, when the sharp pain about the articulation of the jaw soon tells the story.

In some cases the disease will be ushered in with headache and pains in the back and extremities, a well marked chill, followed by febrile reaction. In these cases the inflammatory action runs high and the pain in and about the parotid space and ear is exquisite, and the patient can hardly eat or speak because it increases it. The fever will continue one or two days, and then with increased excretion, but the parotid

swelling will continue for five or six days, and then slowly pass away.

But one side may be involved in the attack, and it is thus claimed that the person may contract the disease again on subsequent exposure, the other parotid being involved.

When there is a metastasis to the testes, the patient feels a deep aching, dragging pain, with occasional lancinating pains through the organ. The slightest touch or pressure occasions exquisite pain. The testicle is found greatly swollen and reddened; very rarely both are affected at a time, but occasionally one is involved, and as the acute symptoms subside, the other testicle swells and becomes tender. In these cases the fever is likely to recur, and the secretions are arrested.

Mastitis is not so common, yet I have seen cases in which the breast was very sensitive and painful. The thyroid enlargement is associated with ovarian irritation in the woman after puberty, and may continue for some months.

DIAGNOSIS.—The nature and position of the swelling are characteristic. If doubtful, it is most liable to be confused with an acute swelling of the cervical lymphatics. In a parotid swelling, the lobe of the ear is near the center of the tumor, which extends backward to the sterno-mastoid muscle and forward on the face toward the zygomatic arch.

A lymphatic swelling is entirely below and behind the jaw.

PROGNOSIS.—The great majority of cases are mild, and terminate in a few days. In young children complications are rare.

TREATMENT.—The patient is put upon the use of Aconite or Veratrum, as indicated, with Phytolacca as the specific remedy in the larger number of cases. A very common prescription is, $\frac{1}{2}$ Aconite gtt. v., Phytolacca gtt. xx., Water $\frac{5}{4}$ iv.; a teaspoonful every hour. Belladonna

replaces the Phytolacca, if there is dullness and stupor; Rhus, if there is sharp pain, frontal headache, and sharp pulse; Gelsemium, if there is increased heat of the head, inability to sleep, with general headache. In some cases there is a clear indication for Sulphurous Acid in the red tongue, with nasty glutinous coating; and in others the indication is equally clear for Sodium Sulphite.

I do not think it best to make local applications to the swollen parotids — a hot flannel cloth tied around the head to insure warmth being sufficient. Still, if the pain is very severe, a lotion of — B Aconite 5j., Phytolacca 5j., Water 5j., may be applied every two or three hours. Sometimes a flannel cloth wrung out of hot water, and applied for a few hours, will give relief.

If there is a metastasis to the testes, they should be well supported with a flannel bandage, and in some cases the lotion of Aconite and Phytolacca may be used, and in others of Belladonna and Phytolacca. In older persons, if the swelling persists, we strap the swollen testicle firmly to the abdominal wall, using adhesive plaster.

CHAPTER XVI.

INFANTILE SYPHILIS.

Syphilis is a chronic communicable disease, due to a specific poison. In infancy and childhood we may have both the acquired and the hereditary forms. Congenital syphilis may present the identical symptoms of acquired syphilis, save only the chancre.

ETIOLOGY. — In acquired syphilis the child may, though rarely, become infected during parturition, but then only when there are lesions upon the genitals.

A child more commonly receives the primary disease

from a chancre of the breast, while nursing, or from a chancre of the lips in the act of kissing, or by the use of cloths or clothing soiled by the discharges from a chancre.

In such cases the presence of the specific sore will be sufficient for the diagnosis. All the symptoms of the primary disease will be there, and after a period varying from two months to a year, constitutional symptoms will be observed.

Vaccination was formerly a source of infection, but the extended use of bovine virus has nearly eliminated this method of infection.

We have a more common source of the syphilitic lesion in the transmission of the disease from one or the other of the parents to the child in utero. This is hereditary syphilis, and is the form we desire to study particularly.

Secondary syphilis may be transmitted by either parent to the child, which will be born impregnated by the poison. The following are the propositions laid down by M. Ricord regarding its transmission, and they may be received as facts well established:

" 1. The father and mother may transmit the disease to their child indifferently, if either or both of them be affected.

" 2. The transmission may occur from the parents to the child, when they are affected with constitutional symptoms, or when a concealed syphilitic diathesis exists in them.

" 3. The absence or existence of constitutional symptoms in parents at the moment of impregnation and conception exerts no influence on the form of the disease which may afterward appear in the child.

" 4. The character and period of the manifestation of the symptoms in the child are governed by the stage to which the disease had advanced in the parents at the moment of generation. The treatment to which the

parents were subjected may also retard, prevent, or modify its appearance in the child.

"5. If the parents are both healthy at the time of generation, and the mother contracts syphilis during gestation, she may transmit the disease to her child.

"6. When the venereal poison is transmitted from the mother to the child during pregnancy, infection takes place through the medium of the placenta, and in this case appears to occur after the fourth month of utero-gestation.

"If the father alone be diseased at the moment of generation, an abortion may occur at any period of pregnancy. If the mother alone be diseased at the time of conception, the abortion will not take place until after the fourth month.

"7. Children born of a father and mother affected with syphilis may escape infection; for a certain disposition to receive constitutional disease is necessary for the child as well as the adult, and this may be absent.

"8. Observations made as accurately as possible seem to prove that constitutional syphilis may be transmitted from the child to the mother during utero-gestation."

PATHOLOGY.—The most important lesions are found in the bones, liver, spleen and mucous membranes. The changes in the bones are most uniformly present. It is doubtful if they are ever entirely absent, even in a foetus which is really syphilitic. The changes are principally in the long bones, and are most important at the junction of the shaft with the epiphyseal cartilage. It is an osteochondritis. In the early stages there is a congestion, swelling and cell proliferation, resulting in the formation of a tumor at the junction of the process and the shaft. The termination of the process varies. It may be arrested by appropriate treatment; the neighboring joint becomes an osteo-myelitis and

The liver is involved both in the foetus and newly born child.

The changes are of two kinds, usually described as an interstitial and gummatous hepatitis. In the first form, usually found in infancy, there is a congestion and swelling of the organ and an exudation between the liver cells; consequently the liver is enlarged. Later there is connective tissue formation and an obliteration of some of the portal and hepatic cells. If this process is diffuse, the liver is large, firm, and of a grayish-yellow color. If localized, the affected areas only are yellow or gray. The gummatous form belongs to a later period, and consists of the formation of miliary syphilitomata, with interstitial changes and the additional formation of small or large gummatous tumors.

According to some writers, the spleen is, after the bones, the part most often attacked. It is enlarged, the capsule thickened and inflamed, and the splenic tissue firmer than normal.

The nasal mucous membrane is the seat of a chronic catarrhal inflammation, accompanied by a superficial ulceration. The ulceration becomes deeper, extends to the periosteum, the cartilage and bones become affected and cause a perforation of the septum and a necrosis.

Chronic catarrhal pharyngitis is almost a constant symptom. Later there may develop a superficial or deep ulceration of the pharynx, tonsils or fauces, which may lead to a perforation of the soft palate.

Otitis frequently accompanies the pharyngitis, becomes chronic and may result in a permanent impairment of the hearing.

Iritis is relatively rare in children. Should it occur, it is when the child is four or five months old, and is always serious. Interstitial keratitis is a late manifestation.

SYMPTOMS.—A disease which pervades the entire econ-

omy, and manifest itself in any of its parts, presents such an endless variety of expressions that a concise survey of its clinical symptoms is difficult.

The symptoms present at birth are few in number, and are usually severe in type, indicating a severe degree of infection, the infant not often living more than a few days, or weeks at the most. The symptoms vary. In some cases the child is born shriveled and emaciated, the skin hanging in folds in different parts of the body. The throat is sore, the voice rough and unnatural, and an unnatural discharge is noticed from the nose. Associated with this may be a pustular skin disease. Bullæ usually appear upon the soles, palms, wrists and ankles, partially filled with a semi-purulent secretion. This is styled syphilitic pemphigus. Pustules, when present, usually form upon the face or scalp. The child is feeble and cachectic; the body wasted, skin wrinkled and temperature subnormal. The lips are cracked and ulcerated, and crusts form at the angles of the mouth and openings of the nostrils. The liver and spleen are enlarged, and digestion is imperfectly performed. It nurses feebly, if at all, and usually dies from inanition in a few days or weeks, often in a few hours.

A majority of the living syphilitic children brought into the world show no signs of the disease at birth, the disease usually manifesting itself within the first three months. Probably the earliest characteristic symptom, in a large proportion of cases, is a coryza, or, as it is termed, "snuffles." It begins as an ordinary cold. The mucous membrane of the nose is swollen, and, partially closing the nasal passages, obstructs respiration. The discharge is sero-purulent and often streaked with blood. The lips are reddened and excoriated. Crusts form and, obstructing the nostrils, render nursing difficult. A hoarse cry accompanies the coryza, and indicates the involvement larynx. The eruption soon makes its appearan-

resembles that of acquired syphilis; it is usually erythematous or macular. On the lips and about the anus, fissures, known as rhagades, are common. Mucous patches, as in the adult, appear in the mouth, and at times ulcerate. The secretions from these ulcerations are a frequent cause in the spread of the disease. These symptoms are accompanied by a slight febrile reaction. Excessive tenderness is also noticed about the shoulders, elbows, wrists and ankle joints, with some swelling. The tenderness is such that the child cries from the slightest handling. The swelling and tenderness are, no doubt, due to the epiphysitis.

In the severe cases the nutrition suffers as the local symptoms develop. The child steadily loses weight, becomes anæmic, moans and cries; the face is wrinkled and the features drawn; the color sallow, and the infant has every appearance of being old. This condition continues until the child dies from inanition, exhaustion or some intercurrent affection.

In milder cases the severe constitutional symptoms outlined above are not seen, although the local evidences of the disease are almost as distinctly marked. The most important symptoms are the coryza, eruption, fissures about the mouth and anus, mucous patches, painful swellings at the extremities of the long bones, and onychia. The coryza has been described. After this has existed for about a week, the characteristic eruption appears. It is usually of the nature of an erythema, or maculæ, appearing most abundantly about the nates and genitals, where the parts are moist, though it may be more general. At first pink, it soon grows darker, assuming the dull, coppery hue.

The fissures and mucous patches are among the most diagnostic features. About the lips and anus the fissures deep and painful, and bleed easily. They are in ulcers.

Syphilitic children present some peculiarities.

A pustule may form on the side of the nail. It ulcerates and extends along the side, involves the matrix, and results in the loss of the nail. The swelling may begin at the base or side of the nail; the nail becomes deeply wrinkled or furrowed, the dorsum is arched, and the nail becomes claw-shaped. It is also brittle and splits easily.

The late hereditary symptoms may show themselves at any time from childhood to puberty. Many of the symptoms are, in the acquired form, classed among the tertiary symptoms.

Many of these subjects are remarkable for their retarded development. They are small in stature, and the muscles remain undeveloped. The skin is almost always thick, pasty and opaque. It often shows little pits or scars, the relics of a former eruption, and at the angles of the mouth are radiating linear scars, running out into the cheeks. The bridge of the nose is almost always broader than usual, and low; often it is remarkably sunk and expanded. The forehead is usually large and protuberant in the regions of the frontal eminence; often there is a well-marked, broad depression a little above the eyebrows. The hair is usually thin and dry, and now and then the nails are broken and splitting into layers. The disease also leaves its mark upon other portions of the skeleton than the skull. We have the thickened, saber-shaped shaft of the tibia, and the swellings upon either the diaphyses or epiphyses of the long bones, due no doubt to a gummatous periostitis. The primary teeth are sometimes late in appearing, are frail and easily destroyed.

The alteration which is the most reliable evidence of syphilis after the child has attained the age of ten years, is the peculiar appearance presented by the permanent teeth, especially the upper incisors. These are usually short and narrow, with a broad vertical notch in their edges, and their corners rounded off. Horizontal notches

or furrows are often seen, but they, as a rule, have nothing to do with syphilis.

The occurrence of well-characterized intestinal keratitis is now considered by several high authorities as pathognomonic of an inherited taint. It is also invariably coincident with the syphilitic type of teeth; and when the two conditions are found together in the same individual, we should certainly feel that the diagnosis was beyond doubt.

DIAGNOSIS.—The coryza, the eruption, especially when upon the palms of the hand and soles of the feet; the fissures and mucous patches about the anus and genitals, combined with the general cachexia, is a combination which forms the basis for the diagnosis of infantile syphilis. The late form manifests itself in many ways. The notched teeth, falling in of the bridge of the nose, evidences of interstitial keratitis, enlargement of the spleen, and deformities of the bones, are the characteristic symptoms. Notwithstanding it involves so much of the economy, cases present themselves in which the diagnosis is extremely difficult. Hutchinson's triad, upon which so much reliance is placed, are the condition of the teeth, ear and eye.

PROGNOSIS.—When the symptoms of constitutional syphilis are present at birth, the prognosis is unfavorable; indeed, as a general rule, it is better that such children should die early, for it is almost an impossibility for the taint to be removed and good health restored. But when it appears some weeks after birth, in the form of *syphilida*, in a well-developed child, we may expect to effect a permanent cure, if the mother's health is not much impaired.

But in most of these cases the evidence of the syphilitic lesion will still remain. The disease makes a permanent impress on the nutrition of the individual, and may be seen for several generations, ~~the symptoms are arrested.~~

TREATMENT.—The objects of treatment in hereditary syphilis are: to increase the process of retrograde metamorphosis, and the removal of the broken-down material by way of the skin, kidneys and bowels; and to improve digestion, assimilation, blood-making, and nutrition, thus renewing the blood and tissues with healthy material.

This must be carefully done, for the influence of the syphilitic poison is to depress vitality, and it is much easier to break down tissue than to replace it. The two processes — waste and renewal — should go on together, the one being the exact complement of the other. Thus, as time passes, the syphilized blood and tissues are replaced with new material not contaminated with the poison, and in the course of some months the disease is wholly removed.

There is no specific against the syphilitic virus; if there were, its administration would suffice. The use of Mercury and Arsenic temporarily arrests its activity in some cases, but they sometimes render it difficult to cure. We have secured as good results without the use of Mercury as could be desired under any circumstances, and we can conceive of no reason why syphilis should not be treated as we would any other disease. The following remedies are those usually indicated:

Ammonium Iodide: Enlarged glands, when the features are pinched and contracted; the eye is dull and the face expressionless, and circulation feeble. It is not as energetic in its action as the Potassium Iodide, but it is better tolerated by the stomach, and is the remedy for children.

Berberis is indicated in glandular induration and chronic ulcerations; in scaly and pustular skin diseases. It is frequently combined with other remedies, and enters into the composition of many of the so-called specific mixtures.

Calcium Sulphide: used in skin disorders, old ulcerations at specially called

for in pustular and suppurative inflammations of the skin.

Ceanthus is called for in patients with a sluggish circulation and inactivity of the liver, with a doughy, sallow skin, puffy and expressionless face, pain in the liver or spleen, with hypertrophy of either of these organs.

Conium is called for in glandular enlargements and for the relief of pain. It induces sleep by relieving the pain, and would be indicated when the child cries and moans from the pains of perichondritis.

Cod-Liver Oil is a most excellent remedy in these poor, debilitated subjects. The wasting and marasmus are marked. We use it both internally and externally as an inunction. For the latter purpose the pure Cod Oil is used.

Corydalis has been extensively used. It is indicated in syphilitic nodules of the bones, and in ulcerations, when the ulceration is persistent and accompanied by a rapid breaking down of the soft tissues.

Echinacea is praised highly as a remedy for syphilis. It is indicated when there is a tendency to gangrenous states and sloughing of the soft tissues; throat dark and full, with a dirty, dark-brown or black coat.

Ferri Iodidum is used in mild cases with an anaemic or impoverished state of the blood. It is useful in the pustular eruptions when there is a marked lack of vitality.

Hyoscyamus is also a good sleep-producing agent, and is useful for that purpose. It relieves the bone pains. We prefer it to Opium in children to quiet the irritability and relieve pain.

Iris: This remedy exerts its action upon the glandular system. It is indicated when the stools are clay-colored, the urine scanty, and the skin inactive and jaundiced. It is one of our best remedies in affections of the skin, with these symptoms.

Phytolacca is useful in nearly all the manifestations of syphilis, either alone or in combination. Its especial

symptoms are pallid mucous membrane, pallid tongue with a slick coat, soreness of the mouth, enlarged lymphatics, and pains of a rheumatic character.

Potassium Iodide: This remedy has been indiscriminately used in syphilis in all stages and conditions. It acts best when we have the peculiar conditions calling for it, which are a broad tongue, with a leaden pallor both of tongue and mucous membranes. It is especially useful in ulcerations and periostitis.

Rhus Tox. is recommended for the tumid, red and glistening swellings of syphilis. Its indications are the sharp, quick pulse, frontal headache and peculiar sharp cry.

Stillingia is indicated by a tumid, red, glistening membrane, with scanty secretion, and skin diseases of a moist character, when the parts are red and glistening. It will be noted, the indications are the opposite to those calling for Potassium Iodide.

The general treatment of these cases must not be forgotten. Fresh air, exercise, bathing and careful dieting must be enjoined. In certain cases, where anaemia or physical weakness is marked, stimulants in moderation, Phosphates) and nutritives must be carefully and wisely administered.

CHAPTER XVII.

TUBERCULOSIS.

Tuberculosis is a chronic (occasionally acute), infectious and communicable disease. Its manifestations may be either local or general, and there is hardly an organ or structure of the body which may not be the seat of tuberculosis.

ETIOLOGY.—The leading causes of tuberculosis are tubercle bacilli and the tubercles included in the general pre-

disposing causes is heredity. A direct hereditary transmission has been claimed, and in exceptional cases tuberculosis has been found in the foetus. As a rule, the child inherits a predisposition from parents whose vitality has suffered from tuberculosis, alcoholism, syphilis or some other constitutional vice, and have thus transmitted to the child a feeble constitution or diminished resistance to infection. Importance should also be attached to the surroundings, so far as they have a tendency to affect the constitution and lower the general vitality of one predisposed. Debilitating general or local diseases often create a predisposition to tuberculosis. It is also a sequel to certain acute infectious diseases, such as measles, pertussis and influenza, which diseases have a tendency to develop pulmonary complications.

The local predisposing causes are pathological conditions of the mucous membranes most exposed to infection. The most important are: repeated attacks of bronchial catarrh, especially of the small bronchi; an unresolved pneumonia, or a pleurisy by compressing the lung and interfering with respiration. No age is exempt from tuberculosis, though it is said to be rare under one year of age. Certain forms are more frequent in children. Thus, in the first two years, it is claimed, it first involves the pulmonary lymph nodes, the lungs and brain. During the third year tubercular meningitis is said to be more frequent, and it is during this period that tuberculosis of the bones, cervical and mesenteric glands, peritoneum and intestines becomes more frequent.

PATHOLOGY. — The pathology of tuberculosis of the lung, as it is met with in the young, necessitates a study of three conditions: (a) Miliary tuberculosis, (b) tubercular broncho-pneumonia, (c) chronic pulmonary tuberculosis.

(a) Miliary tubercles are composed of amorphous granular matter, with a few shrunken cells, and an external zone

of pus cells. These tubercles are found in nearly every case of pulmonary tuberculosis.

(b) Tubercular broncho-pneumonia is the form that follows the acute infectious diseases, and is thus the most frequent and characteristic form in young children. In this form there are smaller or larger areas of cheesy degenerative tissue. These soften and form cavities. There is also some broncho-pneumonia, involving the smaller bronchi of one or more lobes. The cavities thus formed by softening and excavation are usually surrounded by an area of caseous pneumonia, and this in turn by a zone of simple pneumonia.

(c) Chronic pulmonary tuberculosis, or chronic phthisis: The pathological process in this form is essentially the same as in the adult. The changes found are in the air spaces and bronchi. The process is a chronic interstitial broncho-pneumonia, with tubercular nodules. The bronchial glands are said to be a frequent source of infection, and that latent tuberculosis more frequently exists in them than in any other structure of the body. They may suppurate or undergo calcific degeneration. The pleura is hyperæmic and more or less thickened by organized adhesions. This membrane is, indeed, rarely normal. Simple and other forms of pleurisy are frequently met with.

Tuberculosis of the brain, whilst not uncommon in infancy, is relatively more frequent during the second year. The pathological process consists in the deposition of miliary tubercles alone or accompanied by an inflammation of the membrane, with the exudation of inflammatory products, either sero-fibrinous or purulent. There may be caseous nodules.

SYMPTOMS.—In early infancy the diagnosis of tuberculosis is frequently difficult, as the only symptom for some time may be those of *anæsthesia*. It will be noticed that

the infant is pale and thin; that it does not gain in weight, and is emaciated. There may be neither fever nor cough to attract attention, and it may pursue this course even to a fatal termination.

Most frequently, however, there is developed toward the end of the disease the symptoms and signs of pulmonary tuberculosis. The course of the temperature is irregular, and is some index of the process in the lungs, and is caused by it.

The pulmonic symptoms are often few and not well marked, the physical signs indicating a localized bronchitis or broncho-pneumonia. Many of the other symptoms relate to the digestive tract. There may be indigestion, occasional vomiting and diarrhoea.

The intestinal symptoms are said to depend upon the general condition of the child and upon the constitutional disease, and rarely upon a tubercular process in the bowels.

The progress of the disease is steadily downward, and death results from progressive asthenia, tubercular meningitis, or with the symptoms of an acute pneumonia.

In older children the symptoms differ. The patient frequently presents the general symptoms of a continued fever without any of the local symptoms. The cases resemble and have been mistaken for typhoid fever.

Preceding the development of the process in the lungs, there are usually a train of symptoms unimportant in themselves, but which, combined, should excite suspicion. The children are usually delicate, anaemic, and show a loss of weight. Cachexia is marked, the appetite capricious, and the digestion easily disturbed.

After these indefinite symptoms have existed for some time, fever is added. Frequently this is the first evident symptom, and comes without any local manifestations or other evident cause, and is very apt to perplex the physician. Another symptom, nearly always present, is wasting,

After a variable length of time the local symptoms manifest themselves, usually in the apex or middle lobe of the lungs as a broncho-pneumonia. Less frequently it is the peritoneum or brain. If of the peritoneum, there is abdominal distention, tenderness, diarrhoea or constipation.

If the brain be involved, there will be headache, vomiting and fever. The pulse, at first rapid, becomes irregular and slow, respiration sighing; dullness, apathy, convulsions and coma follow.

Tuberculous broncho-pneumonia is the form that in children commonly follows the infectious diseases, particularly measles and whooping cough. This presents itself in several forms. In the first, the child is taken suddenly ill while recovering from a fever. The symptoms present are a sudden rise in temperature, cough and dyspnoea. The physical signs are those of a consolidation of the apices of the lungs, as shown by slight dullness, bronchovesicular breathing and increased vocal resonance.

In the more protracted case, during a convalescence from an infectious disease, the child is taken ill with fever, cough and shortness of breath. The child apparently gets better, but there is wasting, fever and cough. In a few weeks there is a relapse. The temperature and cough increase; there is prostration, and a physical examination reveals the presence of scattered rales throughout the lungs. The child has sweats, the fever becomes hectic in character, and the symptoms are those of chronic phthisis.

Chronic tuberculosis or chronic phthisis in children presents the same clinical picture as in the adult. The disease frequently commences as a simple cold, manifested by coryza, slight cough, seemingly from irritation of the throat, impaired appetite, chilly sensations in the morning, with febrile exacerbations in the after part of the day. The child is restless and fretful, and does not sleep well during the day at its usual times. These symptoms con-

tinue; the coryza disappears, but the cough increases, the chills are more marked, and the febrile reaction becomes higher. Prostration becomes marked, and the appetite is almost wholly lost. The patient is thirsty and drinks often, especially at night, waking every hour or two.

Thus week after week we observe an increasing loss of flesh and strength, until the child is much emaciated. The cough is not very severe, nor is there much difficulty of respiration or imperfection in the aeration of the blood. Still, these symptoms are sufficient to call our attention to the lungs as the seat of the disease.

DIAGNOSIS. — The diagnosis of acute tuberculosis in its onset is in most instances difficult. Persistent fever (not necessarily high), gradual emaciation and cough are a group of symptoms which, though not in themselves conclusive, are sufficiently significant to arouse our suspicions. These symptoms, in connection with the history of a recent infectious disease, especially measles or whooping cough, should cause increased care in diagnosis. The physical signs have already been alluded to in the symptomatology. In children they are not, as a rule, as marked and distinct as in the adult. When the disease is fully developed, or well advanced, there is rarely any doubt as to the diagnosis. The general or constitutional symptoms, in connection with the physical signs, clear up any doubt.

PROGNOSIS. — The prognosis is unfavorable. The disease occurs in children of feeble vitality, and who have little power to resist disease. Still, in some cases an infantile phthisis may be arrested, and by a proper restorative treatment, aided by good hygiene, a moderately good constitution may be developed in time.

TREATMENT. — Children born of tubercular parents should receive especial attention, and should be guarded against catarrhal affections of any description. Especial

attention should be paid to the nose and throat. They should be clothed in flannel, and as the child becomes stronger it should be taken out of doors when the weather is warm and the air calm; and it should also be persuaded to use its limbs and take moderate exercise. In fact, it should live out of doors as much as possible. Fever, cough, night sweats and haemoptysis are contraindications to a life in the open air. When it can not be taken out of doors, its chair or crib should be so placed that it may receive abundance of light, and even sunshine, if not too bright.

In the convalescence from fevers or the acute infectious diseases, the greatest care should be exercised until the convalescence is complete and thorough.

As so much depends upon nutrition, great care should be exercised not to disturb the digestion by medicinal or other means. Every precaution should be taken to advance nutrition. Nausea and gastric trouble mean a rapid loss of strength, and improvement is rare when these are persistent. Fresh air, food and sunshine are three remedies never to be forgotten in the treatment of tuberculosis.

The treatment of these cases can only be outlined, as the indications for remedies will vary, and here, as elsewhere, we wish the right remedy for the conditions present, rather than for a treatment of the name of the disease. In fact, it resolves itself into a treatment of the leading symptoms, even when supplemented by climatic influences. As a consequence many remedies find a place in the treatment of tuberculosis.

Aconite, when the temperature is high, with a rapid, feeble pulse. Especially is it of service in the attacks of acute pleuritic inflammation, with which some forms of the disease are complicated.

Alcohol: The principal indications for the use of Alco-

hol are loss of appetite, poor digestion and rapid, weak heart action. It may be administered in the form of Whisky, Brandy or Wine. At times it is used in connection with Cod-Liver Oil. If it interferes with digestion, it should be discontinued.

Alstonia Constricta: In many cases the afternoon rise of temperature is preceded by a severe chill. In many of these cases Quinine has utterly failed in our hands. In such cases the Alstonia not only stops the chills, but acts as a tonic and febrifuge as well.

Asclepias is of especial value in the pleurisy so frequently met with in chronic phthisis. It is usually combined with *Bryonia*, and is indicated by the full, soft pulse, lack of secretion, and sharp pleuritic pains.

Arsenic, usually in the form of Fowler's Solution, has been strongly advocated for years in tuberculosis. Experience has taught that its usefulness is limited. It is indicated in those cases where the skin shows atony, having a dirty or muddy appearance, and when a fold of it is pinched up between the fingers it fails to show the normal elasticity; the extremities are cold, there are alternate flushes and paleness of the cheeks, contracted and pointed tongue, emaciation.

Belladonna is indicated by blueness of the face and extremities, cold hands and feet, patient dull and drowsy. It is the remedy for congestion, and is of frequent service in the exacerbations of the chronic affection. It is also of service in the exhaustive sweating of phthisis, although in this case Atropine is generally used.

Bryonia is indicated as frequently as any one remedy. It is indicated by the sharp, pleuritic pains so frequently met with, and hard and vibratile pulse. It is of service in both acute and chronic pleurisy, hastening the absorption of deposits and exudations.

Calcium Sulphide is indicated by profuse purulent expec-

oration and feeble recuperative powers. It is especially of service in tubercular joint diseases when attended by profuse suppuration.

Cannabis Ind. is of service in allaying the cough and inducing sleep. Its indications are headache, vertigo, insomnia, feeble and irregular pulse.

Cod-Liver Oil is used as a restorative and tissue builder. It is called for when there is cough and expectoration, elevated temperature, rapid pulse, rapid emaciation, soft and atonic tissues. If it prove remedial, it should be given early in the disease, before rapid degenerative changes are occurring. It is best administered in the form of an emulsion, and even then should be omitted if it disorders digestion and destroys the appetite.

The inunction of Quinine, heretofore spoken of, will answer a very excellent purpose. Even simple fatty inunction will be found beneficial. Let the inunction be of good Cod-Liver Oil, with Quinine in the proportion of 3ij. to the pint. The entire surface should be thoroughly rubbed with this once or twice daily, using considerable friction.

Collinsonia: Cough, with sense of pain and fullness in the larynx; haemoptysis, sore throat, sticking pain in the lungs and larynx, aphonia. It will be noted from indications, it is chiefly of service when the larynx is implicated.

Creosote: We believe this remedy to be overestimated in the treatment of tuberculosis. We have found it to be of signal service in those cases where the expectoration was profuse, purulent and offensive. There was also present gastric irritation and diarrhoea. It should be given in Glycerine or Wine.

Drosera is a remedy for explosive and spasmodic cough.

Ergot is a remedy for haemoptysis, when there is dullness, languor, venous congestion, slow and oppressed pulse. It is especially valuable as a remedy in congestion,

and is of marked value in acute congestions or pneumonic inflammations complicating phthisis.

Ferri Chlor.: The Tincture Chloride of Iron is said to control the night sweats, hemorrhage, bronorrhœa and diarrhœa of tuberculosis. It is indicated in those cases presenting the deep red discolorations of the mucous membrane.

Ferrum Iodid.: When there is marked anaemia, lymphatic enlargements or tubercular diseases of the joints.

Hypophosphite Comp. has been extensively used as a restorative. We frequently employ it when Cod-Liver Oil is not tolerated. The indications for it are pallid, waxen surface, extremities cold, feeble nutrition, debility and an enfeebled intestinal digestion.

Lobelia is used as a cough remedy. The indications calling for it are the same as previously pointed out: a sense of fullness and oppression in the chest, dyspnoea, sibilant rales, cardiac palpitation, dry, hoarse cough; full, oppressed pulse.

Lycopus is another remedy given for the relief of cough. It also gives strength and quiets nervous irritability. It is indicated when the cough is accompanied by a frequent pulse and high temperature, with a sense of burning, soreness and irritation in the lungs; sputa blood-stained, cardiac palpitation, nervousness and debility.

Sulphuric Acid is one of the best remedies for night sweats. We use the Aromatic Sulphuric Acid, often combining with it Quinine. Its indications are those calling for an acid: deep red tongue and mucous membranes. It not only stops the sweating, but acts as a tonic as well.

Veratrum is a remedy for inflammation of the serous membranes. It is frequently used for its influence in the repeated pleuritic attacks so often seen in chronic phthisis, as well as for the pneumonic attacks. Its indications are the full, bounding pulse and pyrexia.

Other conditions, such as gastric and intestinal irritations, resulting in anorexia or diarrhoea, must be met as they arise. It is impossible to lay down any general line of treatment which can be successful even in a small percentage of tuberculous patients.

CHAPTER XVIII.

FEBRILE DISEASES.

The expression "fever" is used to denote a group of symptoms of which an increased temperature is the most prominent and constant symptom. It is either a symptom of some local trouble, or is the only affection present. It is only in this instance it merits the designation "fever." Recognizing the presence of fever, it is necessary to ascertain whether it is symptomatic or idiopathic; in other words, is it a symptom, or does it constitute the disease itself?

In analyzing a simple fever, we find it composed of:

- 1st. An *excess* in the frequency of the pulse, an *excess* in the temperature of the body, and an *excess* of innervation.
- 2d. A *defect* of excretion by the skin, the kidneys, and the bowels, and a *defect* of digestion, assimilation and nutrition.
- 3d. A *perversion* of the blood and of some functions.

PATHOLOGY OF FEVERS.—In order to study the pathology of fever, it is necessary to review somewhat our physiology, which teaches us that the most important results of the metabolism of tissues is the heat of the body. These changes are chiefly in the nature of oxidation, and it is by these means the bodily temperature is raised and maintained at the requisite point to make life possible. For the maintenance of this average or normal tempera-

ture there must be: First, a source of heat; second, channels for its discharge; third, a mechanism for its regulation.

First. The chief source of heat is the metabolism of tissue, which changes take place principally in the muscles, the secretory glands and the brain, although all living tissues contribute their share.

Second. The channels for its discharge are principally by radiation and conduction from the surface, and by the evaporation of water from the same part; by means of the air passages in the act of respiration, and to a less extent by the excretions and by partaking of food and drink of a lower temperature.

Third. The mechanism for its regulation lies in the nervous system.

Although radiation and conduction are controlled through the vaso-motor system, the influence of the nervous system in the production and regulation of the temperature is all-important. Aside from the power of the vaso-motor system of increasing the blood supply to the internal organs and to the tissues, by which means metabolic changes are increased, and so the production of heat, there is strong evidence pointing to the presence of a heat-controlling center similar to that which regulates the secretion of the saliva or sweat, and by means of which the production of heat in the warm-blooded animals is increased or diminished. This center has been experimentally located at the anterior part of the caudate nucleus, and clinical observations serve to demonstrate still more strongly the presence of such a center, by reason of the increased temperature observed in certain cerebral affection.

In fever, we have not only increased metabolic changes going on in the tissues, with an insufficient time for their renewal, but this regulating mechanism which serves to

maintain the proper equilibrium between heat formation and dissipation has lost control as well.

Clinical and pathological proofs that this theory of the production of fever is correct are quite abundant. The rapid wasting so characteristic of fever, with the increase of the salts of potash, urea and other nitrogenous substances in the urine, point to the too rapid metabolic changes going on in the tissues, with an insufficient time for renewal, as well as does the characteristic pain and weakness.

Though the meaning of some of the demonstrated facts pertaining to the pathology of fever is still in doubt, Welch says: "There exist in the body chemical processes resulting chiefly in the production of heat; that these processes are under the direct control of the nervous system, and possibly of special thermal nerves; that there are regions in the central nervous system which are in some way connected with these nerves, and through them control the chemical processes resulting in heat-production."

SIGNIFICANCE OF TEMPERATURE IN CHILDREN.—We have previously called attention to the instability of the temperature in children, which renders it liable to disturbance from trifling causes. A mere trifle will cause an infant to have a high temperature, but as the child grows older the temperature becomes less liable to disturbance, and acquires the stability of adults.

This same instability characterizes to some extent the febrile diseases in children, and presents peculiarities in the temperature curves not met with in the same diseases in the adult.

Recognizing this instability of the temperature in children, too much reliance must not be placed on the temperature alone.

CLASSIFICATION OF FEVERS.—The fevers which we will

consider are the evanescent, or febricula; the malarial, of which there are two types, intermittent and remittent; and enteric, or typhoid fever.

FEBRICULA.

Occupying a prominent place in the diseases of childhood, if we regard the percentage of cases, is febricula, simple continued or ephemeral fever. It is of brief duration, and is unaccompanied by any definite local lesion. In all grades of what appears to be a febricula, we ought to examine carefully and see if the symptoms may not be due to some local disturbance or visceral derangement. A diagnosis of febricula will, by this care, often have to be set aside in favor of some other acute disorder.

ETIOLOGY.—The causes of febricula are numerous. They embrace most of the group of fevers caused by disordered digestion. They may be either from errors of diet or from indigestion due to cold. It may follow exposure to excessive heat, or to the action of cold arresting secretion from the skin. During the prevalence of typhoid fever we frequently encounter fevers of this character, which run a brief course without exhibiting the distinctive features of typhoid.

Many cases are undoubtedly due to an unrecognized tonsillitis, lymphadenitis or catarrhal condition of the respiratory mucous membrane.

Lasting but twenty-four hours, it would be called an ephemeral fever: running a course of five, six or more days, we would term it simple continued fever.

SYMPTOMS.—The symptoms of febricula are those common to all fevers. The patient has a chill of longer or shorter duration, but not usually of much severity. Preceding this chill, it will be observed, sometimes for a few hours, that the child is dull and languid, cross, or that it wants to sleep more than usual. Following the chill, the

pulse increases in frequency, and the temperature becomes higher, the secretions are checked, and there is more or less excitement of the nervous system. The febrile reaction comes up rapidly, and usually attains its greatest intensity in from two to four hours, the temperature ascending quickly to 102° or 104° F. The urine is scanty and high-colored. There is constipation, often difficult to relieve. The tongue is furred, and when gastric symptoms prevail, vomiting and anorexia are present.

In other cases the respiratory organs bear the brunt of the attack, and we have the symptoms of a bronchial catarrh, the breathing being labored and rapid, the face flushed, with a slight cough. Mucous rales are heard over the entire chest.

Occasionally the excitation of the nervous system becomes very great, and the child suffers severely from this. We have headache, vomiting, intolerance to light, great restlessness and a tendency to delirium, and in some cases may have convulsions. Herpes labialis is a frequent symptom.

The natural duration of the disease is from one to three days, terminating by the establishment of free sweating, a critical diarrhoea or a copious flow of urine.

DIAGNOSIS. — There is no difficulty in determining that the child has fever, for all the symptoms are very clearly defined. But it is not easy, always, to determine the character of the disease.

The diagnosis rests mainly upon the exclusion of other acute fevers. A high fever, occurring suddenly in a previously healthy child, is in favor of febricula.

The diseases which are principally to be excluded are tonsillitis, typhoid fever, meningitis and scarlet fever.

The absence of local manifestations and of any skin eruption, as well as the rapid disappearance of the pyrexia, clears the diagnosis.

PROGNOSIS.—The prognosis is favorable, whether the patient has treatment or not, and we can safely say that the disease will terminate favorably by the close of the third day.

TREATMENT.—For the excited circulation and to favor diaphoresis, add Aconite gtt. v., Asclepias 3j. to ij., to half a glass of water, and give in teaspoonful doses every hour until a good action has been obtained. If there is irritation of nervous system, alternate Gelsemium with the sedative, gtt. x. to xxx. to water 3iv.; a teaspoonful every two hours. If there be evidences of bronchial catarrh, Bryonia gtt. x. may be substituted for the Gelsemium.

In cases of gastric disturbances, due to the ingestion of same undigestible substance, a laxative may be all that is necessary.

These means, supplemented by sponging, are usually sufficient.

MALARIAL FEVERS.

Malarial fever is an infectious, non-contagious fever, caused by the presence in the blood of the plasmodium or haematozoon malařiae of Laveran.

The usual manifestations of malaria are: (1) Intermittent fever, either of the quotidian, tertian or quartan type; (2) pernicious and rapidly fatal forms; (3) malarial cachexia; (4) remittent fever. The characteristic of malaria are an enlarged spleen, periodical febrile attacks and extreme anaemia, with a tendency in protracted cases to an irregularity of symptoms.

The manifestations of malaria as seen in the adult are met with in older children. In children below five or seven years of age the usual symptoms may be masked, or some may be wanting entirely.

ETIOLOGY.—The character of the soil is universally

recognized as playing the principal part in the cause of malaria. Humidity seems to be an essential factor. Marshes and swamps that overflow at certain seasons of the year, and are afterward exposed to the influence of the atmosphere, producing an excess of vegetation, are proverbially recognized as breeding grounds for malaria. Cultivation and civilization seem antagonistic to its growth, as it is commonly recognized that with the advent of cultivation and drainage, malaria disappears. Heat and moisture, being essential factors, account for its greater prevalence and more virulent form in the tropics and subtropics. In this section it reaches its maximum intensity in autumn, and is more prevalent after a prolonged hot summer.

All authorities agree that the *Plasmodium Malariæ* of Laveran is found in the red blood corpuscles in malaria, and that they destroy the corpuscles infected, hence accounting for the anaemia present in this affection. What part they play in the cause, how they enter or leave the body, is not as yet positively known.

It affects both sexes, and the most cases occur among children from two to eight years of age.

PATHOLOGY.—There is no doubt that the cause of malarial fevers acts upon the blood, and from it upon other parts and functions. There is always a period of incubation in which the morbid material, whatever it may be, is increasing. Finally it produces depression of the vital powers, and a chill. Then the vitality of the system seems concentrated for its removal, and we have the febrile reaction, succeeded by the sweating stage, in which secretion is re-established.

The changes are said to result from the disintegration of the red blood corpuscles and the accumulation of pigment caused thereby, with a possible influence of toxic material produced by the parasite.

The spleen, liver and kidneys are usually enlarged, and

in many cases soft and showing pigmentation and cell death. This pigmentation is most abundant in the blood vessels of the liver and spleen.

The enlargement of the spleen is the most constant, and can usually be felt by palpation below the margins of the ribs.

INTERMITTENT FEVER.

SYMPTOMS.—An intermittent fever in the child presents the same symptoms and in the same order as in the adult. The paroxysm consists of the three stages: (1) Chill. (2) Fever. (3) Sweat. There is a period of depression for a short time, in which the child is dull, its face pallid, the extremities cold, and the lips and finger nails bluish. The teeth chatter and there is uneasiness and fatigue. The chill is thus introduced, and increases in intensity for a longer or shorter time. The child is seen to be cold, has more or less rigors, its pulse is small and increased in frequency, and the secretions seem to be locked up.

Continuing thus for a short time (from a half hour to an hour), the symptoms of the chill gradually pass away, the surface becomes warm, loses its bluish appearance, the pulse increases in frequency, and the symptoms of nervous depression pass away. But going beyond the point of healthy reaction, the surface becomes hot and more or less dry, the pulse increased in frequency.

The pulse is also changed as to freedom, and is more or less hard, and the nervous system is excited, and we have all the characteristic febrile symptoms, such as thirst, restlessness, scanty urine and a full, bounding pulse. The fever attains its maximum intensity in from two to six hours, and there is then a like gradual decline to the *sweating stage*.

This stage of an intermittent is announced by the diminished frequency of the pulse and its character, and

disappearance of nervous excitement. The temperature of the body is reduced, and the child breaks out into a free perspiration, and there is also increased secretion from the kidneys.

There is then a complete intermission, the child presenting no evidence of disease for twenty-four, forty-eight, or seventy-two hours, as the fever is *quotidian*, *tertian*, or *quartan* in type, except in some rare cases, in which it assumes the form of a double quotidian, there being two revolutions of the fever each day.

The temperature record is peculiar. With the advent of the chill, the temperature rises suddenly and rapidly, often as high as 104° or 105° F. A slight rise may occur even before the chill, but the most pronounced rise is at this time. There is but little further elevation during the second stage, declining with the third stage at first slowly, then rapidly.

In children we rarely have the complete paroxysm as outlined by the three stages. It may consist of one alone or of two of the stages, the one most frequently missing being the chill; the fever is always present.

In place of a chill, there may be vomiting, headache, lassitude and general pain. The chill may also be replaced by cold hands and feet, the nose pinched and cold, blue lips and finger nails and sunken eyes, and at times even general cyanosis.

After several attacks, the peculiar malarial cachexia manifests itself, and the patient presents that jaundiced hue so characteristic of these cases. He loses his appetite and is languid and listless. The skin is waxy and doughy and the spleen enlarged.

WITH NERVOUS COMPLICATION.—In some nervous system suffers severely. There depression during the chill, with tendency dullness and coma. In other cases there

excitation of the nervous system, with determination to the nerve-centers, and sporadic cases of cerebro-spinal meningitis and acute lepto-meningitis are seen. In some cases the ague is attended with convulsions, and again obstinate neuralgias of undoubted periodic character betray their malarial origin.

WITH INFLAMMATORY COMPLICATION.—In other cases we notice a very high febrile reaction, the fever being prolonged beyond the usual time. The sweating stage is imperfect, and during the intermission the child still suffers, the skin is dry, the urine scanty, and the pulse somewhat hard.

WITH GASTRIC COMPLICATION.—In still other cases, the stomach and associate organs seem to suffer severely. In some the stomach is very irritable, and there is nausea and vomiting during the chill and early part of the febrile reaction. And even in the remission the irritability of the stomach remains, so that digestion is imperfectly performed.

In another class of cases the tongue is pale, broad, and coated with a white, or yellowish-white, tenacious fur. The appetite is capricious, digestion imperfect, and nutrition of tissue is not well performed.

In still another class of cases the mucous membranes are darker, even dusky, and the coatings of the tongue are also dark-colored. Digestion is imperfect, and nutrition is to a considerable extent suspended. In the severer cases there is a tendency to septic decomposition, and diarrhoeas occur. And in all, the usual antiperiodic treatment fails to arrest the disease.

MASKED INTERMITTENT.

In the diseases of children, as with the adult, we meet with many cases in which, if the periodic influence is not the cause, it continues it, and prevents suc-

cess from the ordinary treatment. Many of these cases are very obscure, and will require that the practitioner look closely for the malarial complication, that the real disorder be detected.

Almost all of the inflammatory diseases may be thus complicated, and we frequently find this complication at the bottom of persistent gastric and intestinal disturbance, and of lesions of innervation, and especially of nutrition.

PERNICIOUS MALARIAL INTERMITTENT.—We purpose here to very briefly describe three forms:

(a) Congestive Chills, or as it has been sometimes called, Congestive Fever. In this form there is intense congestion of the internal organs, while the surface of the body is cold and pale, and the features shrunken. It is often accompanied with violent gastro-intestinal symptoms, which hasten the condition of extreme collapse, to which these patients are so often brought. Notwithstanding the coldness of the surface, the internal temperature of the body is raised considerably, even as high as 108° F.

In certain cases the thoracic organs appear to bear the brunt of the attack, and the symptoms point to an intense congestion of the lungs, which rapidly proves fatal.

(b) Malarial Hematuria; in this case the chill is prolonged and severe. The urine is scanty and bloody, and contains albumen. Hemorrhages may occur from the various outlets of the body, as well as cutaneous ecchymoses upon various portions of the body. Urinary suppression occurs and the patient suffers from uræmic poisoning.

(c) In the comatose form, violent cerebral symptoms prevail, such as active delirium, or coma. There is high fever, and the excited condition may disappear at the end of the paroxysm or continue throughout.

MALARIAL CACHEXIA.—This is the result

quent recurrence of an ordinary intermittent fever, and is a chronic condition, and is generally one difficult to handle. The symptoms of this condition are varied, but there are two striking symptoms nearly always present, the anaemia and the enlarged spleen, or as it is commonly called, "the ague cake."

The symptoms are those usually present in anaemia, as shortness of breath, oedema of the ankles, and in severe cases hemorrhages, with the peculiar yellow-tinted skin. There is at times an irregular fever, but no well defined chills. Numerous complications may develop when this condition exists, and many irregular types and symptoms are attributed to it, and often styled as "Chronic Malaria."

DIAGNOSIS. — The diagnosis of intermittent fever rests upon a recognition of the periodicity of the paroxysm and the occurrence of the characteristic symptoms, such as the enlarged spleen, peculiar complexion, and herpes.

If the symptoms are marked or irregular, the diagnosis is at times difficult. It is claimed that the microscopic recognition of the parasite, said to be the cause of malaria, renders the diagnosis positive.

The two conditions most liable to be mistaken for intermittent fever are hectic fever and chills from some deep-seated suppuration.

In the first instance, the pyrexia is generally in the afternoons and the outbreaks irregular, with an incomplete intermission. A careful physical examination assists in clearing up the diagnosis.

In the second case, the extreme prostration and rigors at the same time that the patient has more or less fever, and the profuse sweating, in connection with the irregularity of the "inictive features of the rigors (

forms, is seldom fatal. The pernicious forms usually follow one or more mild attacks, and are thus in a measure preventable. Simple intermittent may, if unchecked, so undermine the health that the patient may succumb to other acute diseases, otherwise curable.

TREATMENT. — During the chill the child must be kept warm; this may be aided by giving warm drink occasionally, and there is nothing better, especially if the child craves drink, than hot lemonade, sweetened just enough to make a pleasant drink, and taken at pleasure.

As soon as reaction takes place, give the required sedative, with any other remedy that may be indicated. Aconite, if the pulse is small and rapid and there are no complications. Veratrum, if the pulse is full and bounding and with gastric complication. Asclepias is the child's diaphoretic, and an essential part of the treatment when the skin is harsh and dry; Gelsemium is always to be thought of when the pupils are contracted and face flushed, with irritation of nervous system. If there is dullness with a tendency to sleep, indicating congestion, Belladonna will prove a fine remedial agent.

As soon as the pulse and temperature begin to decline and secretion is established, the antiperiodic is to be given.

Quinine is *the* antiperiodic, though there are other remedies that act in the same manner, but less efficiently. We are quite sure, however, that the failure of Quinine to cure does not invalidate the diagnosis of malaria. Every physician who has lived in a malarial region has seen cases of well marked intermittent in which Quinine has failed utterly. Some prefer to give a sufficient quantity in a single dose. My own experience leads me to favor broken doses. This for a child two years old will be from two to three grains, administered after the paroxysm for the prevention of a recurrence.

We sometimes meet with difficulty in administering Quinine to a child on account of its bitterness. We have used the Sulphate and Bisulphate in mixtures of Yerba Santa, Glycyrrhiza, etc., with indifferent success. The better plan is, no doubt, to prepare the mixture just previous to administration.

Where Quinine can not be given by mouth, we frequently use it by inunction. Especially in the nervous and gastric forms of the disease this method will be found beneficial. We order: $\frac{1}{2}$ Quinine Sul. 3j., Adeps, or warm Olive Oil, $\frac{5}{4}$ ij. Let the child be thoroughly rubbed with this twice daily; brisk friction while it is being employed is of great importance. After the chill is broken, and especially in malarial localities, it is best to continue the antiperiodic for three or four days, giving it less frequently, however, in one grain doses twice daily, repeating it on the seventh day.

The indications for Quinine are, a moist skin and tongue, a small, feeble pulse, and periodicity. Given in such conditions, it will prove curative.

In the nervous complication, with dullness and congestion of the nerve centers, we use Belladonna, associated with Aconite.

Rhus Tox., in alternation or with the Aconite, will be found indispensable in some nervous complications.

It is indicated by the small, sharp pulse and shrill cry. Stimulant frictions to the skin, as a combination of some of the essential oils with lard, are aids to the treatment. These means are continued until the symptoms are no longer marked during the intermission, and then Quinine is given as before.

In the second form — with irritation of the nervous system and determination of blood — we prescribe Gelsemium in alternation with the Aconite or Veratrum. If the symptoms have been very severe, Potassium Acetate may be

given for a day or two before the administration of the antiperiodic.

Gelsemium is indicated by the flushed face, bright eyes, contracted pupils and tendency to convulsions.

When meningitis supervenes or is threatened, Jaborandi will be found indicated by the full pulse, dry skin and pain in the back and limbs.

In the case of *inflammatory* intermittent, the administration of the special sedatives, until a complete sweating stage and intermission is produced, will frequently be all that is required. The important point in all of these cases is, not to give the Quinine until the system is thoroughly prepared for its reception.

The *gastric* complication gives the greatest trouble, as there is not only imperfect digestion and nutrition, but medicines are not absorbed from the stomach. In the first case named, with evidences of an atonic condition of the digestive organs, with pale tongue and sallow skin, we should give the patient Nux in small doses every hour.

If there be evidences of irritation, with sharp, pointed, elongated tongue, with reddened tip and edges, Ipecac in small doses should be given each hour.

When the tongue is broad, and coated with the pasty coat, we advise the administration of Sodium Sulphite in doses of two to four grains, every two or three hours. When this condition is very marked, and the disease has continued for some time, a thorough emetic is the shortest road to a cure.

When there is the dusky discoloration of the mucous membranes, the patient wants Baptisia every hour, and the Quinine should be given in the form of an elixir, prepared with Muriatic or Nitric Acid and Simple Syrup. This will supply the required acid, and render the anti-periodic ready for immediate absorption.

The child may have a hot foot-bath once or twice a

or sometimes a general hot bath. Cold applications over the stomach will usually answer a better purpose than counter-irritants.

In severe persistent cases the following local application will relieve when all other means fail: Take of Cinnamon, Cloves and Allspice aa., sufficient quantity, cover with good Whisky and Water, equal parts, and make an infusion, strain and keep it hot, wring flannel cloths out of this and apply to the epigastric region. It will quickly relieve and refresh the little sufferers.

The *pernicious* forms of malaria are met by the same methods employed in ordinary intermittent.

In congestive chills, during the stage of collapse, hot applications, by means of hot bricks or water bottles, should be made to the body, and stimulants given either by mouth or hypodermically. That which has served us best has been the Capsicum combined with Quinine. The latter should be energetically administered, so as to cinchonize the patient as speedily as possible. After reaction has taken place, the indicated remedy should be given:

Belladonna, when the patient is listless, dull and stupid.

Gelsemium, when the reaction is high, the eyes bright and face flushed.

Rhus Tox., with the sharp frontal headache and shrill cry and wiry pulse; or an emetic, should the tongue be heavily coated and broad, and the evidences point to an overloaded stomach.

If the thoracic organs appear to be involved, Lobelia should be given. It will be indicated by the slow, feeble or oppressed pulse. It should be given alone or in combination with Belladonna or the indicated sedative. At the same time the larded cloth, dusted with the Comp. Powd. Lobelia and Capsicum, should be applied to the chest.

The other forms are treated in a similar manner. The tient is first prepared by the indicated remedy for the

antiperiodic, which is then given in a form that can be readily assimilated.

In Malarial Cachexia, with the enlarged spleen, Uvedalia Ointment applied over the organ and heat applied, in order, as it were, to hasten absorption, has proved to us most satisfactory. Uvedalia may also be given internally with profit, when the tissues are full, inelastic and sodden. We have known several cases of "Chronic Ague" cured by Taraxicum, when Quinine had apparently failed. The object to be attained is, to get the patient's system in a proper condition, in order that digestion and assimilation may take place before the antiperiodic is administered.

REMITTENT FEVER.

The fevers of childhood are almost always remittent in form, a continued fever being of very rare occurrence.

In this disease, also termed "bilious remittent fever," on account of the gastro-intestinal symptoms present at times, although the temperature does not reach the normal, it is characterized by distinct remissions of temperature. There are no distinct intermissions. In the adult it possesses all the elements of a fever, and runs a regular and uniform course. In childhood it often is defective in many of its symptoms, and is irregular in its course and duration.

Etiology.—The cause of infantile remittent fever is as distinctly malarial as in the same form of the disease in the adult. I know of no means of determining this cause, other than that it prevails in localities and at times when the adult remittent fever is noticed. The ordinary cause of continued and typhoid fever in the adult—animal malaria—will produce a species of remittent fever in the child.

Pathology.—The febrile poison, whatever may have been its source, seems to act primarily upon the blood.

During the incubation of the disease, which occupies a longer or a shorter period of time, the solids of the body become to some extent involved through impaired nutrition. Thus, when the febrile symptoms are fully announced, there is the double lesion, a morbid material in the circulation and impaired vitality of the blood, and imperfect material through all the tissues of the body, from the depraved nutrition.

For the first days of the fever the lesions seem principally of function, but as the disease is protracted, the solids of the body become more and more affected. This is in three ways: by the impairment of the vitality of tissue, by the febrile reaction — by waste, leaving worn-out and dead tissue in its place — and by imperfect and faulty nutrition, whereby feeble and imperfect tissues are formed.

Post-mortem examination shows a deterioration of the blood, and in some of the worst cases the red corpuscles of the blood are much broken down. There are melanotic changes in the spleen, liver and brain, the amount depending upon the length of time the affection has existed. The tissues are but little softened, except in quite recent cases, when the spleen will be found soft and pigmented.

SYMPTOMS.— In the majority of cases there is a forming stage of from one to six days. During this the child seems dull and listless or cross and fretful. It sleeps at unusual times during the day, but not soundly, and is restless and uneasy at night. The appetite fails, the bowels are irregular, and occasionally slight febrile reactions occur.

The chill is not usually so marked as to attract notice. The child seems very quiet and dull, draws up to the fire, and wants to drink more than usual. Lasting but a short time, febrile reaction comes up quickly, and in a couple of hours presents its most marked symptoms. The skin is hot and somewhat dry, the pulse frequent and hard, the mouth dry, and the tongue coated white; the urine is

scanty, the bowels constipated, and there is considerable nervous irritation.

The fever varies considerably, as regards the remissions. In some cases there is but one remission, and that usually in the morning; in others there are two, and in others three, and in still others the fever is broken up into short febrile exacerbations of irregular duration, so that there may be a dozen or more in the course of twenty-four hours.

As the disease progresses the symptoms increase in severity, the febrile reaction is higher and more prolonged, and the remissions are less marked. The important functions are also involved to a greater extent, and the patient becomes more and more debilitated.

In severe cases the remissions become so slight, the fever resembles a continued one, and presents many of the symptoms peculiar to typhoid. These cases run a course of three, four or more weeks. In some instances mild cases may pursue the continued type.

Remittent fever is frequently complicated, and, as a general rule, the greatest danger to life is from complications. The more common complications are: of the brain, the digestive organs, and of the respiratory apparatus.

WITH DISEASE OF THE BRAIN.—There are two principal lesions of the brain, noticed early in the disease. These are: irritation with determination of blood, and congestion.

In the first case the child is noticed to be more than usually restless and fretful, its eyes are bright, and it is continually wanting drink, and various things that it sees. In a short time it is noticed that the face and scalp are flushed, the head is hotter than usual, the eyes are bright, with contracted pupils, and the restlessness has increased. The disturbance thus commenced may go on to the development of inflammatory — after — for some time — three or four days — congestion and

coma; or in other cases the excitement may eventuate in the production of convulsions.

In the second case the child is dull, and has a tendency to sleep much, but sleeps with its eyes partly opened. The eyes are dull, pupils frequently dilated, and the face has a heavy, expressionless appearance. As the case progresses, coma comes on, and gradually deepens until it becomes impossible to arouse the child from it.

WITH DERANGEMENT OF THE DIGESTIVE ORGANS.—The common lesions of this apparatus are: irritation, or atony of the stomach with morbid accumulations. The irritable stomach is readily recognized in most cases. The child can not take food, drink or medicine without nausea and retching. The tongue is elongated and pointed, tip and edges more or less reddened, and the coating—usually white—confined to its center.

In the second case there is also nausea and efforts at vomiting, food is not digested, and medicine produces sickness and is not absorbed. The tongue is unusually pale, broad, and covered with a pasty white coat.

In both of these cases the disease runs its course more rapidly, not only on account of the sympathetic derangements that flow from such gastric disturbance, but also because digestion is arrested, and all our means of cure are inefficient because not absorbed.

WITH DISEASE OF THE RESPIRATORY APPARATUS.—In the winter and spring infantile remittent fever is frequently complicated with disease of the respiratory organs. In the majority of cases it is nothing more than an irritation, with a more or less troublesome cough. In others a well developed bronchitis, and in others a lobular pneumonia is set up.

The symptoms are usually very plain. The child has cough, with increased frequency of respiration, and some-

times slight difficulty in breathing. At first there is dryness of the bronchial mucous membrane, afterward increased secretion. Where these symptoms are marked, a physical examination of the chest should be made, to determine the character of the trouble.

DIAGNOSIS.—The diagnosis of a remittent fever would be easy were it not for its frequent resemblance to typhoid. In typhoid we have no *marked* periodicity, excepting when it is beginning to improve. In *remittent fever* we have no diarrhoea, no eruption, no constant thoracic symptoms, no marked prostration so characteristic of typhoid.

In intermittent fever each paroxysm begins with a chill. In *remittent fever*, following each exacerbation there is simply an abatement of the fever, not a distinct remission.

PROGNOSIS.—The prognosis is favorable. Unless the complications are severe, there is little danger of a fatal termination. The mortality to be expected in the course of ordinary practice will be from two to five per cent., depending upon the viability of the patients.

TREATMENT.—The treatment of a remittent fever is usually very simple, and also very successful. The first object is to reduce the pulse to the normal standard, and get a free and equal circulation of blood. The second, to remove any irritation or other derangement of the nervous system. The third, to establish secretion, and get a good condition of the digestive apparatus. The fourth, the employment of agents to antagonize the malarial or other cause of disease.

The first indication is very surely accomplished by the use of the special sedatives, and the accessory means — a general bath once or twice daily — the hot foot-bath. We usually prescribe Aconite, + Aconite, if the pulse is small and we full. The action of these + ooked

for at once; they require time, but it is noticed that under their use there is a continuous amendment in all the symptoms. In the course of forty-eight hours the febrile reaction has to a considerable extent subsided, the pulse is but little above the normal standard, and the circulation is free and uniform; and we are ready to look after the second indication.

As a general thing, we will not need to use any special remedies to relieve the nervous system, for any irritation or other disturbance will pass away with the febrile reaction. The special cases that demand treatment will be named hereafter.

The third indication is also frequently fulfilled by the action of the special sedatives, without other means. But when secretion is not established as we should like, we put the little patient on *Asclepias* $\frac{3}{j}$. to Water $\frac{3}{iv}$, a tea-spoonful every hour, which, with a hot Mustard foot-bath, will soon establish secretion from the skin.

Secretion from the bowels should be obtained by minute doses of *Podophylin* or other laxative. Or, if there is simply retention of faeces, it is best overcome by the use of mild laxatives or enemas. Purgatives should not be used unless there is a special indication for their employment.

The fourth indication of cure is accomplished in the strictly malarial cases by the administration of Quinine in doses of one to two grains every two hours, given with an acid. We never give Quinine to child or adult until we have so prepared the system for its reception that it will act kindly, and as a curative agent. With the action of the sedatives, and secretion beginning to be established, it may be given with a considerable degree of certainty.

With the subsidence of the disease and the establishment of convalescence but little medicine will be required. We think it advisable to give the sedatives in quite small doses,

for two or three days after the fever has entirely passed away, as the child convalesces more rapidly under their influence. In some cases a restorative aids recovery. Syr. of Phosphates gtt. x., four times daily, Comp. Syrup Hypophosphites, or Dilute Muriatic Acid 3ij. to Simple Syrup 3ij., half a teaspoonful in water as a drink, every three or four hours, will answer a good purpose.

Determination of blood to the brain is arrested by the administration of Gelsemium, which, in this respect, is specific in its action. We usually give it in combination with the sedatives. When there is danger of convulsions from the same cause, Gelsemium may be relied on with great certainty to prevent it.

The dull, congested condition, with tendency to coma, is antagonized by the administration of Belladonna, which is also specific in its action. Prescribe it with Aconite in the following proportion: Rx Aconite gtt. v.; Belladonna gtt. x., Water 5iv.; a teaspoonful every hour. The hot stimulant foot-bath, and occasionally counter-irritation to the spine, will be beneficial. But the dry rubbing, in both mild and severe cases, will frequently be all that is desired. It arouses the inactive condition of the system, restores the capillary circulation, and with the internal use of Belladonna the cure is complete. The rubbing or dry bathing must be done gently but thoroughly, five minutes being sufficient time to operate, repeating it every hour and a half or two hours.

The *irritation of the stomach* is met by the use of cold or warm applications to the epigastrium, and heat and stimulants to the extremities as the external means. Internally, Nux or Ipecac may be given, and they will do the work best when given with as little fluid as possible. To accomplish this the preparation of Nux should be made stronger than usual, about gtt. v. to the gtt. xv. every half ho-
ater, and give excellently

in severe cases, when there is irritation and nausea. If there is nausea with flatulence, Colocynth alternated with the Ipecac will be the remedy; or Bismuth Subnitrate, in Mint Water, continued until the irritation is removed. At the same time small doses of Aconite may be given for its sedative effect, and also for its influence in controlling the irritation of the solar plexus of nerves, which attends the gastric irritation.

Much care will be required in these cases, to prevent a renewal of the gastric irritation, as the disease progresses, especially to give our remedies in such way that they will not be likely to produce it.

In the second case, with atony and *morbid accumulations*, if the symptoms are marked, the shortest method will be to give a prompt emetic. This is not a pleasant means with children; but when the symptoms are grave, it is the most successful method.

In malarial localities the emetic is at times a first consideration, as it is worse than useless to give the child other remedies until the stomach has been placed in a condition to receive them. The Acetous Emetic Tincture is preferable to use. In the same cases it will be absolutely essential to use: R Podophyllin gr. 1-20, Leptandrin gr. 1-15, Sugar of Milk sufficient to make one grain of the powder. Dose, one every three hours during the first day, and three, one at morning, noon and night, during the second day.

In other cases we find the tongue broad, pale, and covered with a pasty coat. If these symptoms are very marked, the mouth being nasty and the breath fetid, the speediest method of obtaining relief would be the administration of Sodium Sulphite in five grain doses every two or three hours, or if the tongue is red and dirty, Sulphurous Acid.

As a general rule, disease of the *respiratory* organs will yield readily to the treatment for the fever. If an inflam-

mation is developed, we advise either the cotton or oiled-silk jacket to the chest. And if there is much cough, some simple remedy should be given to relieve this.

If the cough be loose, with mucus rattling and a sense of oppression and constriction, Lobelia is called for.

If dry and irritating, with tickling of throat, Sanguinaria or Sanguinarine Nitrate gr. j. to Simple Syrup $\frac{5}{ij}$.

If with the cough there is pain between the shoulders, Sticta, or if it be spasmodic and dry, Drosera.

TYPHOID FEVER.

Typhoid Fever, sometimes called "slow infantile remittent, enteric or intestinal fever," is an acute infectious disease, due to a specific cause. This cause is said to be a specific germ, called "Eberth's bacillus."

The fever rarely occurs in infancy, but is not uncommon in childhood. In children it is of shorter duration than in the adult, and it usually pursues a milder course. Serious complications are less frequent, and it is attended with a lower mortality. Its pathological characteristics are, hyperplasia and sloughing of Peyer's glands; clinically, it is noted for its usually slow, insidious onset, peculiar temperature curve, swollen spleen, rose-colored spots on the abdomen, tympanitis, diarrhoea, and frequent complications.

Etiology.—Typhoid fever is a disease of youth and early adult life; the years of greatest susceptibility being from fifteen to thirty, although it is by no means rare after two years of age, and quite frequent after five. Cases have been reported in children as young as six months, though we have not seen typhoid in children under two years of age, and have frequently met with it between five and ten years.

Although a constant disease in the temperate zone, it is observed in all countries and in every climate, being most

prevalent during the late summer and early autumn months, hence the name sometimes applied to it, "autumnal fever." It is most prevalent after hot, dry summers. This has been said by Pettenkofer to be due to the lowering of the standing or ground water, which fact, in connection with a favorable condition of soil and other surroundings, favors the development of the germ or exciting cause. We are all cognizant of the fact that when a country is new and undeveloped, the prevailing type of fever is malarial. Coincident with the clearing up of the country, more extensive tillage, rapid drainage of surface water and increased population, the fevers change in type, becoming continued or typhoidal in character, intermittent fevers becoming correspondingly rare.

The disease, whatever its exciting cause, whether a specific germ or not, is, as a rule, conveyed through the medium of the stools. It gains access to the body by means of infected drinking water or milk, and occasionally in solid food, by reason of careless or dirty attendants, and possibly occasionally by direct transmission. Our own experience leads to the belief that when whole families are affected, or it prevails as a local epidemic, it is because the community is exposed to the same local cause.

Whether the germ is the direct cause, or whether it generates a toxin within the body, is as yet unsettled. We do know, however, that certain conditions serve to maintain its vitality, or act as a cause, such as cesspools, stagnant sewerage, or, in general, *animal dirt*. Its presence in water would reveal a continuous contamination. Intestinal catarrh and nervous influences, such as overwork or mental excitement, are predisposing causes.

PATHOLOGY.—Owing to the milder course of typhoid fever in children, the opportunities for studying the pathological lesions in the young have been limited. In a general way, we may say they resemble those in the adult,

excepting in severity. Fatal cases, in which the clinical diagnosis was clear, on post-mortem examinations, have shown only moderate redness and swelling of Peyer's patches, the solitary follicles and mesenteric lymph nodes; whilst the degenerative changes in the heart, kidneys and liver were less severe than is usually seen in the adult.

The lesions of typhoid fever are of two kinds; the first, due to the local action of the poison or toxin upon the lymphatic system of the intestinal canal; the second, due to the result of the long-continued fever or constitutional infection, and shown by the degenerative changes in the various organs.

The first, when examined early in the disease, consists only of an extensive hyperplasia of the lymphatic elements of the intestines. The parts particularly involved are, Peyer's glands in the ileum and lower part of the jejunum, while the solitary glands in the small intestines and colon are occasionally infected. The process at first consists of a capillary dilatation of the blood vessels, followed by a cell infiltration, which causes more or less compression. This condition of necessity terminates either by resolution or necrosis and sloughing.

Unfortunately the latter usually takes place, unless the cell infiltration has been quite mild in degree. Thus, before the hyperplasia can subside, necrosis takes place as the result of the compression and choking of the blood vessels. The necrotic crusts or sloughs thus formed are gradually separated from the periphery to the center, and are cast off. It is this separation of the sloughs which causes an erosion of a vessel, and thus a hemorrhage. The slight hemorrhages or bleedings may take place from the swollen, hyperæmic edges of an ulcer.

The detachment of the necrosed portion leaves behind the typhoid ulcer, which corresponds in size and shape to the necrosed portion. Its depth varies, involving only the

mucosa or all the coats, thus causing a perforation. Healing rapidly follows the formation of the ulcer, and the various stages may be seen in one case. The diarrhoea is usually due to a catarrhal condition of the small and large bowels.

As a rule, the spleen is enlarged. It becomes hyperæmic, soft and granular.

The secondary lesions, the result of the long-continued fever, show themselves usually as degenerative changes in the liver, kidneys and heart; though the muscular and other structures are not exempt from the same process. They become hyperæmic, and exhibit parenchymatous degeneration.

The lungs in typhoid fever nearly always exhibit morbid lesions. They are usually of a bronchitic nature, though pneumonia may ensue. If it occurs early, we have that condition known as typhoid-pneumonia.

SYMPTOMS.—In studying the symptomatology of this disease, we will first consider it as it pursues its usual course; then briefly study its effects upon the several systems separately.

In children over ten years of age typhoid fever does not materially differ from the same disease as met with in the adult. In those under this age it presents its peculiarities, lacking that marked sequence of phenomena that characterizes it in the adult. In the child, the prodromal symptoms are not so marked; the onset is more frequently abrupt, bronchial irritation and nervous symptoms are more pronounced. Epistaxis, hemorrhage, perforation and other complications are not so frequent.

The period of incubation is one week to ten days. The patient complains of aching and soreness. There is a coated tongue, nausea, and at times of malaria and las-

ing tired, general feeling now

used, there will be found an afternoon rise of temperature, which is usually accompanied by chilly sensations, with alternate flashes of heat or by a well marked chill.

With these symptoms there is generally epistaxis and a slight diarrhoea. Whilst this is usually so, it is not absolute, as constipation may exist in the beginning, or even throughout the disease.

If the case begins abruptly, there will be a pronounced chill, followed at once by a high temperature and the usual symptoms. It is customary to divide this fever into three stages: (1) That of development, corresponding to the first week; (2) acme, or fastigium, corresponding to the second and third week, and (3) decline or defervescence, corresponding to the fourth week. The stages, unfortunately, are not so well defined in the young, and, moreover, complications and an irregular course may obscure or materially lengthen them.

The prodromal symptoms, as noted above, are soon followed by prostration, and the patient takes to his bed. There is now a steady and daily increase of temperature for the first four or five days. The tongue is coated white, the abdomen slightly distended, and a dry cough is noted.

The bowels may be constipated, and by the end of the first week the constipation be replaced by two or three loose passages daily, or either condition may exist from the beginning, and continue throughout the disease.

The child has now reached the second week and the second stage. There is now complete loss of appetite; the headache is less intense or entirely absent. The skin is hot and dry, the tongue slightly coated, there are from two to four diarrhoeal passages daily, the sleep is disturbed, and a bronchial cough is present.

The temperature runs from 102° to 103° F., and the pulse from 90 to 120 per minute. The abdomen is distended

and tympanitic. Slight tenderness and a gurgling will be found by palpation in the right iliac fossa and the spleen will be found enlarged. This stage may last four or five days, or well into the third week, according to the severity of the disease. In the latter case the symptoms become more marked, the headache entirely disappears, there is marked dullness of the mental faculties, with a mild delirium. Or the delirium may be wild and noisy, with wakefulness, followed by stupor and a low muttering delirium, accompanied by picking at the bedclothes and subsultus tendinum. The tongue becomes dry and cracked, the lips are dry, with sordes upon the teeth and gums.

Should constipation have run into the second week, it is replaced by a diarrhoea, there being usually from four to six thin, yellowish and offensive passages daily. The bowels are tender and swollen, and the spleen is enlarged. The characteristic rose-colored spots appear upon the abdomen about the tenth day.

The evening temperature rises to 103° or even 105° F., and we have seen it reach 106° F. without a fatal termination. The temperature now pursues nearly a continuous course; that is, the morning remissions are very slight. The pulse is rapid, 120, 130, or even higher, and lacks strength.

This is the period when the grave complications, such as pneumonia, hemorrhage and perforation, are apt to arise.

At the end of the second week in mild, or the third in more severe cases, the fever begins to decline. The morning temperature becomes steadily lower until it reaches the normal. With the decline of the temperature there will be heavy sweats and the intellect becomes clear, and all the general and local symptoms gradually abate. The prostration has been sufficient to keep the child in bed, whilst the emaciation has been steady and marked.

The case is not considered fully convalescent, however, until the evening temperature, as well as the morning, becomes normal.

We will now briefly study the peculiar features of this disorder.

The Temperature.—While the temperature curve is said not to be always typical in children, our own experience has taught us that there is not such a wide difference in uncomplicated cases from that in the adult as we have been led to believe. It is well known that the temperature in children is not as stable as in the adult, and slight indispositions cause it to rise. The range of temperature in children is slightly higher than in a case of equal severity in the adult.

Unless of sudden onset, there is usually a gradual and steady rise in the evening temperature for the first few days of from a half to a degree and a half, until the evening temperature reaches its height, of from 103° to 105° F. It now maintains nearly a continuous course for the second and sometimes the third week, and then assumes a markedly remittent type, the difference between the morning and evening temperature gradually increasing, until the former becomes normal. The period of maximum temperature is usually from three to six in the afternoon, the minimum from four to eight in the morning.

A temperature higher in the morning than in the evening is usually an unfavorable symptom, as well as is a continuous high temperature for several days, or one without a morning remission.

A sudden fall denotes an intestinal hemorrhage. We have seen a fall of five degrees precede by several hours the appearance of an intestinal hemorrhage.

Sudden elevations during convalescence are common, and are usually due to errors in diet and to complications. As a rule, they are of no special significance. They should

be distinguished from a relapse, which is a repetition of the original condition, and should have the same symptoms as at the onset.

As a rule, a relapse is less severe and of shorter duration than the original attack.

Hyperpyrexia is uncommon, except just preceding death, when we have seen the temperature reach 107° F.

Circulatory System.—The pulse usually corresponds to the temperature. Exceptionally it may be slow throughout the disease, being but little, if any, above normal. During convalescence it is rapid and feeble. An extremely rapid, feeble pulse is a grave symptom, as well as is an irregular one.

Digestive System.—The appearance of the tongue varies greatly. It may be broad and covered with a dirty brown, pasty coat, or it may be covered with a white fur. It may be red at the tip and edges, with a yellowish coat in the center.

The fur separating leaves the tongue bright red and moist, or dry and red, according to the degree of prostration. If in the latter condition, it cracks, finally becomes brown, the lips also become dry, and sordes appear upon the teeth.

In the beginning constipation is nearly as frequent as diarrhea. The frequency of the passages is usually proportionate to the severity of the case; yet this rule is not absolute, as occasional cases are seen in which constipation exists throughout the disease. Involuntary discharges may occur, and are associated with a grave condition. The stools are of a characteristic yellow appearance, either fluid or of the consistency of jelly, and of an offensive odor.

There is nearly always tympanitis, due to the generation of gas and the arrested peristaltic action of the bowels. The pain is not severe, though pressure usually elicits some tenderness in the right iliac fossa.

Hemorrhage, not common in the child, occurs at the end of the second or the beginning of the third week, and is indicated by the sudden fall of temperature and symptoms of collapse.

The spleen is nearly always enlarged, though sometimes difficult to outline.

Respiratory System.—One of the most frequent initial symptoms is bronchitis. Pneumonia may be an initial symptom, or occur as a complication during the second or third week of the disease. When it occurs early, it gives rise to that condition known as typhoid-pneumonia. Epistaxis, although not so frequent in children, is an early diagnostic symptom.

Nervous System.—The nervous symptoms are very prominent in children, and in severe cases are usually more prominent than the intestinal symptoms. They are, as a rule, proportionate to the height of the temperature.

The earliest symptom is the intense and persistent headache complained of by older children. This may be so severe as to give the impression of meningitis, which does sometimes co-exist.

Delirium is present in all severe cases. It may be from the beginning, but usually develops about the second week. The delirium is succeeded by a stupor, varying in degree. We now have subsultus tenditum, coma-vigil and carphologia. Even when no delirium exists, the child is usually dull, listless and apathetic.

When the temperature declines, the nervous symptoms also subside.

Paralysis or complete aphasia may arise as complications. We have met the latter condition in a boy of eight, with no other mental or motor disturbance. A complete recovery took place.

The Skin.—The skin becomes dry. The rose-colored erupti-

h and dry. The rose-
venth day upon the

abdomen and chest. It resembles somewhat a flea bite; disappears upon pressure, and is frequently confined to but a few spots.

Sudamina is in our own experience very frequent upon the abdomen. It is said to be due to the sweating.

Other complications which we have met in children under ten years of age are a membranous angina and rhinitis, resembling diphtheria, and an arthritis.

DIAGNOSIS.—We determine this fever by the long prodromal stage, by the steplike rise of temperature during the first week, the then continuous fever, the epistaxis, tympanitis, enlargement of the spleen and the eruption.

These symptoms mark the typical case. A positive diagnosis is, however, well-nigh impossible in the first week, excepting in a well marked case. Especially is this so in children under three years of age. After five the disease is more frequent, and the diagnostic symptoms more nearly resemble those of the adult.

The diseases from which it is to be differentiated are: remittent fever, catarrhal enteritis, meningitis, and acute tuberculosis.

Remittent fever lacks the peculiar temperature curve and the abdominal symptoms of typhoid. The temperature is also apt to strike the normal some time in the twenty-four hours. Cases of remittent present themselves at times which are almost impossible to differentiate. A microscopical examination of the blood and the remedial action of Quinine will clear up the diagnosis.

Catarrhal enteritis is limited to the first three years of life. The symptoms are distinctly gastro-intestinal. The febrile disturbance is slight, with the usual nervous phenomena. In typhoid we have greater prostration, more marked fever, and enlargement of the spleen.

Meningitis is characterized by the marked anæsthesia, intolerance of light, restlessness, peevishness, muscular

rigidity, irregular respiration, slow, irregular pulse, paralysis, coma and retracted abdomen. This array of symptoms is rarely seen in typhoid.

In typhoid with marked nervous symptoms, the temperature is higher than in meningitis; though in a case of typhoid with an abrupt beginning, the severe headache, photophobia, delirium, twitching of the muscles and retraction of the head would be apt to mislead and difficult to differentiate.

Acute tuberculosis and typhoid in the first week or two frequently resemble each other. The greater frequency of the pulse and respirations, and the prominence of the cough, are distinguishing features of the former. The abdominal symptoms and peculiar temperature curve point to the latter. The appearance of the local evidences of the former clears the diagnosis.

PROGNOSIS.—The death rate of typhoid fever is not high in children unless it be during the first year. Owing to the partial exemption from the severe complications which children enjoy, the death rate among them is smaller than in the adult.

The conditions upon which we base the prognosis are: (1) The severity of the type of fever, as indicated in a measure by the temperature, or early involvement of the nervous system. (2) The circumstances of the patient, such as the surroundings, previous health, care, etc. (3) The presence or absence of dangerous complications and accidents, such as pneumonia, hemorrhage, nephritis, etc.

The gravity of these several conditions has been noted above. The most fatal period is the third week.

TREATMENT.—In a study of the treatment of typhoid or enteric fever, we at once recognize the fact that there are two-fold object to attain: First, the protection of the patient, and, second, the treatment of the patient.

PROPHYLAXIS.—The best method of limiting the spread of typhoid fever is by disinfection, and to disinfect thoroughly or efficiently we must pay attention to (1) the excreta; (2) the bed and its coverings, and (3) to the patient and the sickroom.

(1) Our custom has been to disinfect the discharges by a 1 to 20 solution of carbolic acid. A small portion is kept in the vessel continuously, and after the movements have been received into the vessel, more is added, so as to thoroughly disinfect them before burying.

In the case of children the napkins or diapers are immediately placed in an antiseptic solution, and allowed to remain in it for several hours before being boiled and washed. Some prefer to use a solution of chlorinated lime, six ounces to a gallon of water; others bichloride of mercury, 1 to 50.

(2) The bed and body linen should be changed daily, or oftener should they become soiled by the discharges. They should also be subjected to a prolonged boiling and washed, which process is of itself a good disinfectant; or they can be placed in one of the above solutions before being washed.

(3) The patient should be sponged at least once daily, preferably in the evening, as the sponging seems to allay any nervous excitement and induces sleep. If the temperature is high, the sponging can be repeated twice daily.

The room should be kept well ventilated both day and night, avoiding draughts. All utensils used in feeding the patient should also be boiled. The success of treatment lies largely in the management and nursing. Combined with the care noted above, which could be more forcibly expressed in the words "strict cleanliness," we also enjoin

points or duties a good nurse can fulfil in the position of the little patient,

moistening the mouth and lips frequently, and keeping them as well as the teeth clean of sordes, which all add much to its comfort and enhance its chances for recovery.

The diet should be restricted preferably to liquid. Milk is the best article of diet. It is often well to dilute it with plain, boiled water, or lime water. Should it become distasteful, some of the milk foods can be substituted, or meat broth or juices instead. Water should be given frequently, and should be offered even though not called for. It is best to boil the water used for drinking.

The directions as to diet should be explicit, as the intestinal symptoms are increased when the patient is overfed, and if underfed, the derangement to nutrition is increased and convalescence prolonged.

The precautions in general treatment and care having been seen to, our attention will now be directed to the medicinal treatment. We look upon it as folly to talk of a routine treatment for typhoid, as though it was an entity to be driven bodily from the person. We have outlined the symptoms, and have shown them to be both numerous and varied, and it is only reasonable that we vary our treatment accordingly. We learn here most forcibly the value of *specific medication*.

We will study our remedies as we did the symptoms, by their action upon the various systems. We will consider, first, the circulatory and nervous systems. We have learned that they are closely interwoven, and that the nervous system frequently suffers in proportion to the height of the temperature. What will lower the temperature and pulse usually quiets the nervous manifestations. We choose our remedies thus:

Aconite.—The pulse is fast and small, temperature elevated. We use this remedy in small doses; never over three to five drops to half glass of water, teaspoonful every

hour. It is claimed by some Aconite is a dangerous remedy and depresses the heart's action. We have used it extensively for many years, and never experienced such an action. If such an action is produced, it is because it has been used in too large doses, producing the poisonous rather than the medicinal action.

Veratrum.—The pulse is full and bounding, with evidences of pneumonia or inflammation of serous membranes. Elevated temperature. These are the principal sedatives. Associated with or in alternation with them we use the following, which, in fact, may at times be substituted:

Rhus Tox.—Sharp frontal headache. The tongue has reddened tip and edges. Pulse small and sharp, and the little patient cries out sharply and abruptly in its sleep. There is a tympanitic abdomen and acrid discharges from the bowels. It will exert a good influence not only upon the temperature, but upon the nervous system as well.

Gelsemium.—This remedy we probably use more frequently than either of the above. The indications calling for it are: the bright eyes, flushed face, contracted pupils, and the restlessness and nervousness of the patient, with the evidences of determination of blood to the brain. We value this drug highly in the early days of typhoid fever. Its effects upon the circulatory and nervous systems are marked and salutary.

Belladonna.—The indications for this drug usually come later in the disease. It is the remedy for congestion. It is indicated by mental dullness, drowsiness and dilated pupils. Its action is not only upon the cerebral congestion, but by its influence upon the entire capillary circulation it favorably influences the intestinal mucous membrane and glands as well.

Hyoscyamus.—There is delirium, cerebral irritation and

excitement. Flushed face, sleeplessness, rapid and excited action of the heart. It is used to quiet nervous excitement and induce sleep.

Passiflora.—Restlessness, insomnia, irregular pulse, cerebral irritation. We use it to induce sleep. It is not a very strong remedy, but when the insomnia is the result of nervous irritation and excitement, and not pain, it will work admirably.

Stimulants.—There is general prostration, weakness of the heart's action, prominent nervous symptoms, such as a low muttering delirium, and picking at the bed clothes. Profuse, cold, clammy sweats. We prefer whisky; though, if it is distasteful, some good wine, such as Port, Sherry or Madeira, can be used.

All cases of typhoid do not call for a stimulant, nor is it necessary in the early days of the fever. Such indications as we have outlined as calling for their use are usually found in the latter part of the second or fore part of the third week. We frequently not only administer the stimulants internally, but sponge the patient with Alcohol and Quinine as many times daily as seems necessary.

There are times when this restlessness and sleeplessness is of such grave import that sleep becomes a positive necessity. *Passiflora* fails, stimulants do not reach the case. It is a condition described as *coma-vigil*. Opiates in such cases produce sleep and the much needed rest.

The remedies called for by the digestive system are generally used in alternation with the above. We study them in the same manner:

Sodium Sulphite.—The tongue is broad and covered with a dirty white coat, and the mucous membranes pallid. It may be given in solution or in capsules. We prefer the latter.

Baptisia.—Dark or purplish mucous membrane reddened and dusky, with brown coating. Face

suffused, breath sickening and offensive. Discharges from the bowels present the appearance of meat washings; dull headache and oppressed pulse.

Echinacea.—This is one of our most recent and valuable additions to the therapy of typhoid as well as of other infectious diseases. Its action seems certain as an intestinal antiseptic. It is indicated by darkened mucous membrane, profuse and bad smelling discharges, and feeble vitality.

Sulphurous Acid.—The indications for this acid are: the red, slick tongue, with slimy coat in the center; sordes upon the teeth and full tissues. We have seen it work wonders when properly indicated.

Hydrochloric Acid is indicated by the deep, red tongue, brownish coat, sordes on teeth, with evidences of an impaired condition of the blood. Probably the best method of administering it is by adding a sufficient quantity to water to make it pleasantly acid, and then give it at will.

Carbo-Veg.—This is one of our best remedies for the control of the intestinal hemorrhage. Its indications are: intestinal hemorrhage, pallid, flabby tongue, with soft, moist coat, salty taste in the mouth.

Bismuth Subnit.—This is used for the control of the intestinal catarrh. It is indicated by gastro-intestinal irritation, with frequent diarrhoeal passages containing blood. Given in combination with Carbo-Veg., it will give universal satisfaction.

Ergot and Gallic Acid have been used for the intestinal hemorrhage. The former would be indicated by the intestinal hemorrhage, weak pulse, cold surface, contracted pupils and mental torpor.

Ipecac will in some cases of gastro-intestinal irritation prove a better remedy than the Bismuth Subnitrate. It is indicated by the elongated, pointed tongue, with reddened tip and edges. In combination with any of these remedies, Turpentine is used for the tympany. Should

the distension be severe, an enema of warm water, containing a few drops of Turpentine, can be used in lieu of or in combination with the stupes. Instead of the stupes we frequently apply to the abdomen Turpentine and Lard *aa.*, and believe it possesses advantages over the stupes.

Turpentine is also used internally to arrest the intestinal hemorrhage. It is used in those conditions where the tongue is dry, glazed and dark red. The temperature persistently high, the pulse small, wiry, rapid and feeble, with distension of the abdomen from tympanitis; the urine dark and scanty.

The remedies used by reason of the implication of the respiratory organs are: Aconite, Veratrum, Bryonia, Ipecac, and Lobelia. There may be others, but these are those principally used.

Aconite and Veratrum we have previously studied, and we will be guided by the same symptoms. They can be given singly, in combination with, or in alternation with, any of the other remedies prominently indicated.

Bryonia is called for by the short, catchy respiration. The pulse is hard and vibratile; the right cheek flushed, frontal headache and pain aggravated by motion. This remedy will nearly always be found indicated in lung complications, whether it be pneumonic or bronchitic.

Ipecac and Lobelia are the remedies for cough as well as for other conditions. The first when the cough is short, dry and hacking, with little or no secretion; the other symptoms being as before mentioned.

Lobelia, when the cough is loose and rattling, with abundant secretion, and accumulation of mucus within the bronchi. There is also a full, oppressed pulse, or it is small, with a feeble action. The action of the heart is labored and the respiration is painful and difficult.

Occasionally a stimulant as well as an expectorant is needed, when we would use Ammonium Carbonate, either

with or without alcoholic stimulants. It will be called for by the feeble pulse, diminished cutaneous circulation, pallid and cold skin, and labored respiration.

Other remedies may be indicated. We have here simply outlined our method of selecting them. Chosen as we have indicated, with a proper care of the hygienic condition both of patient and of the surroundings, we are positive the results will be all that could be desired.

Convalescence should be carefully watched, and a return to a full, solid diet cautiously approached. If constipation should follow the return to a full diet, laxatives and cathartics should be guardedly given. We have known perforation to follow their injudicious use.

Quinine has but little value in typhoid; then only in the small tonic dose during convalescence. Even then we would follow its indications, the moist skin and tongue, with evidences of periodicity.

CHAPTER XIX.

DISEASES OF THE EYES.

The eye is one of the most important organs of the body, and though its diseases do not usually endanger life, their favorable termination is watched for by patient and friends as anxiously as that of the more grave maladies. As regards the pathology of these affections, we will find it the same as in other portions of the body, and, as a general rule, the same treatment will be applicable. Inflammation of the structures of the eye is the same disease as inflammation of any other part of the body, differing only as regards the peculiarity of structure and function of the parts. So it is in all other diseases, and he who properly understands the pathology and nature of the affection need be at no loss for appropriate treatment.

BLEPHARITIS.

Inflammation of the edges of the eyelids is noticed more frequently in children than in the adult, and is frequently associated with some depraved habit of body, or of an error of refraction. When primary, it may be the result of cold, smoke, impure air, or filthiness; but it is most usually associated with a catarrhal conjunctivitis. The disease is located in the edge of the lid and meibomian follicles, and in many cases so affects the roots of the eyelashes as to cause them to fall out. The conjunctiva is reddened and sensitive, and the patient complains of a sensation of roughness, and as if there were sand in the eye, when the lids are moved, and thus there is the constant tendency to keep them partially closed. The margins of the lid are red and swollen and agglutinated together in the morning, sometimes so much so that the patient has to soften them before he can open them, and it is even then attended with pain. Blepharitis is essentially a chronic affection, with but little tendency to spontaneous recovery, and is sometimes very difficult to cure.

TREATMENT.—As there is almost always a faulty constitution, with marked evidence of some cachexia, we find it important to put the patient upon a tonic course of treatment. Corydalis, or Stillingia, with Potassium Iodide, may be administered in the usual doses when indicated. Some preparation of Iron should be given when there is anaemia. Once in a while Cod-Liver Oil is of advantage, and occasionally we give our patient Fowler's Solution of Arsenic, or Calcium Sulphide.

Very much depends upon keeping the eyes clean, and removing the tenacious secretion without causing pain and irritation. Hence the lids should be frequently bathed during the day with a warm solution of Boracic Acid, so as to keep them as free from the secretion as possible, and

anointed with plain Vaseline, or Vaseline in which Boracic Acid or the Yellow Oxide of Mercury has been incorporated. This should be applied also on retiring at bed-time. On rising the eyes should be bathed with a warm solution of Boracic Acid or Zinc Sulphate until the lids can be opened. They should never be pulled apart. Any existing error of refraction should be corrected. Frequently this is sufficient for a cure.

CATARRHAL CONJUNCTIVITIS.

The conjunctiva covering in the globe of the eye, and lining the lids, is exquisitely sensitive, and though abundantly protected, is frequently exposed to the causes of inflammation. Temporary inflammation is often seen as the result of dirt or sand in the eye, or even exposure, but very soon disappears with rest. The disease we are now describing may arise from cold, sudden changes of temperature, irritating vapors, extension of inflammation from the mucous membrane of the nose, or from inoculation with the secretion of a diseased eye. This last cause should be carefully guarded against, as we not unfrequently observe whole families attacked with the disease from the indiscriminate use of towels.

SYMPTOMS.—The disease commences with a sensation of dryness and smarting of the eyelids, as if dirt or sand had got into the eye. In a short time the eyes seem tumid and swollen, the unpleasant sensations have increased, and a more or less abundant secretion, sometimes mucus or muco-pus, is established. If the eyes are now examined, the palpebral conjunctiva will be found red and swollen, with more or less redness of the ocular conjunctiva. As the inflammation progresses, the last portion of the conjunctiva becomes more completely involved, and we sometimes observe ecchymosis or extravasated blood under

it. In a still severer form the conjunctiva is remarkably injected and swollen to the point where it passes into the cornea, so much so occasionally as to cause chemosis. Catarrhal ophthalmia is frequently periodic, the exacerbation always occurring in the evening, and sometimes attended with headache; the pain and itchiness cease a short time after going to bed, and the patient sleeps well, but in the morning, on attempting to use the eyes, the lids are stuck together. Opening them, flakes of muco-pus will be seen lying in the fornix. Photophobia is usually present, but not so intense as in phlyctenular conjunctivitis.

In many cases the disease continues thus for a week or ten days, and then gets well without further change; but in some cases it is more persistent. The cornea is sometimes obscured and hazy from the inflammation.

DIAGNOSIS.—Catarrhal conjunctivitis is usually recognized with ease. The inflammatory action commencing in the palpebral conjunctiva, and subsequently extending to the ocular portion, with secretion of muco-pus, are the characteristic symptoms.

PROGNOSIS.—This is good, with any proper care or attention.

TREATMENT.—The treatment of inflammation of the eyes will be conducted on the same general principles that govern our therapeutics in all forms of inflammation. Though the part involved is but small, it requires exactly the same general means as if it were an entire lung or other large organ. Remedies, also, will be found just as definite in their action, and as prompt in arresting the inflammatory process.

The patient has the indicated sedatives, Aconite or Veratrum, if there is pyrexia. Other remedies are given according to the indications. Rhus, if there is burning pain in the eyes, or sharp pulse with frontal headache;

Gelsemium, if there is flushed face and active circulation to the brain; Belladonna, if there is dullness and capillary congestion; Bryonia, if there is tensive pain in the eye and through the orbits; Apocynum, if the lids are markedly swollen (œdematous); Phytolacca, if the cervical glands are involved or there are phlyctenulæ; Apis, when there is itching of the eyes; Macrotyls, when there is muscular pains; Pulsatilla, when there is nervousness and fear of some impending danger; Calcium Sulphide, when suppuration is free; Ferrum Iodide, when in addition to the enlargement of the glands anaemia is marked.

Occasionally a very foul tongue with sense of oppression will call for an emetic. Full veins and full tissues generally will want Podophyllin. The simple pallid tongue wants a salt of Sodium; the broad, pallid, dirty tongue, Sodium Sulphite; the red, dirty tongue, Sulphurous Acid.

In malarial regions the frequent necessity for anti-periodics will be noted, and many times they will serve quite as good a purpose as in other diseases with periodic complications. I have seen a conjunctivitis arrested in a couple of days with Quinine alone.

Cleanliness is of the utmost importance and of first consideration. The eyes should be bathed with a Saturated Solution of Boracic Acid, either warm or cold, as the patient desires. The same solution should also be dropped between the lids. The solution should be used as often as is necessary to keep the eye clear of any secretion. At night the margins of the lids should be anointed with Vaseline, to prevent them adhering. After the acute stage has passed, an astringent solution, such as Zinc Sulphate or Hydrastis and Water, may be used.

PHLYCTENULAR CONJUNCTIVITIS.

Phlyctenular Conjunctivitis, sometimes known as "Herpes Conjunctivitis," Eczema of the Conjunctiva, or

Scrofulous Conjunctivitis," is characterized by sharp, circumscribed elevations, one or more in number, at the sclero-corneal margin, and accompanied by a corresponding injection of the conjunctiva. They are frequently associated with the same condition of the cornea.

ETIOLOGY.—Constitutional taints are usually ascribed as causes. It is frequently accompanied by eczema, enlargement of the lymphatic glands and rhinitis. Those affected are often badly nourished and the victims of a depraved or capricious appetite. We are satisfied that in older children errors of refraction are etiological factors of importance.

SYMPTOMS.—The symptoms are: marked pain and intolerance of light, free secretion of tears, deep redness of the eyelids, but slight of the ocular conjunctiva. Soon we notice the production of one or more blisters on the cornea, causing a true keratitis. When occurring after the exanthematous diseases, it is usually associated with a considerable muco-purulent secretion, which agglutinates the lids together. Relapses occur upon the slightest provocation.

DIAGNOSIS.—In phlyctenular conjunctivitis the appearance of the small vesicles or ulcers in the cornea marks the distinction. That form described as *pustular* is marked by the formation of pustules, terminating in ulcers in the ocular conjunctiva near the cornea.

nosis is favorable. It is only when the disease invades the

PROGNOSIS.—When the vesicles are isolated, the prognosis as regards the cornea to any considerable extent that there is any danger to vision.

TREATMENT.—Success in treating phlyctenular conjunctivitis will result only when a proper attention is paid to the general health. Good hygienic surroundings and a proper diet must be insisted upon. We are sure that a

number of cases in our own experience were cured only when an existing error of refraction was corrected.

Internally we administer Calcium Sulphide, when there is a tendency to suppuration; Phytolacca, when the lymphatic glands are enlarged; Apis, when there is itching and oedema of the lids; Apocynum, when the lids are puffy, swollen and oedematous; Rhus Tox., when the lids burn and the tears are hot and scalding; Berberis, when there is an eczema complicating the case, and relapses are frequent.

Locally, we use the wash of Boracic Acid, with or without Hydrastis. If the photophobia is excessive and the vesicles encroach upon the cornea, the instillation of a solution of Atropine is needed. After the acute symptoms have subsided, the dusting of powdered Boracic Acid or very finely powdered Calomel will hasten the absorption of the vesicles. In lieu of these, Yellow Oxide of Mercury Ointment may be used. Protection from strong light is necessary, but a bandage seldom.

OPHTHALMIA NEONATORUM.

This trouble, which is so fruitful a cause of blindness, is a fair example of what may and can be accomplished by the exercise of care. Much of the good to be done in this line falls to the lot of the general practitioner, and the "weal or woe" of the little patient most frequently lies with him. It is a purulent ophthalmia in infants.

ETIOLOGY.—It is a disease of the new-born, and it may be due to infection from a vaginal discharge, or from the hands of the physician or nurse, or from dirty cloths or water.

The severer cases are thought to arise from the introduction of purulent matter into the eyes from the soft parts of the mother while the child's head is passing through the vagina. The severest inflammation of the eyes known

is caused by inoculation with gonorrhœal virus, and we have abundant evidence that other purulent discharges from the vagina are quite as virulent.

PATHOLOGY.—In the milder cases the inflammation is confined to the conjunctiva, and is but little more than determination of blood. In the severer cases the inflammation is at first of the conjunctiva, but of very active character, impairing the vitality of the tissues, and giving rise to free suppuration. In many cases it gives rise to separation of tissues, and extending to the cornea, causes ulceration. In still severer cases it extends to the deep-seated structures of the eye, causing perforation, dislocation of the lens, and other lesions that destroy the usefulness of the organ.

SYMPTOMS.—The principal symptoms are swelling of the lids, chemosis and a purulent secretion. There may be ulceration and even sloughing of the cornea. Both the ocular and palpebral conjunctiva are inflamed, at times intensely so, and spongy, bleeding upon the slightest touch. The secretion varies from a comparatively thin, hot, scalding discharge, to a thick, creamy one, issuing from between the swollen and closed lids.

While every case does not present ulceration of the cornea, its integrity is at all times a source of anxiety. With increasing chemosis and swelling, the danger of its involvement becomes almost a certainty. It commences as a diffuse haziness, spots of ulceration or infiltration, and we can never be assured where it will end; but one thing we do know, sight will be permanently impaired to some extent. With the perforation of the cornea there may be a protrusion of the iris, staphyloma, or the lens falling forward; adhesions take place with the consequent formation of a cataract; or even worse, the lens may escape and phthisis bulbi ensue.

DIAGNOSIS.—The time of onset, the secretion as well as the reddened conjunctiva, render the diagnosis comparatively easy.

PROGNOSIS.—This should always be guarded. Especially so if there be any complications of the cornea; or if the inflammation be very active. The fact that this disease is the most fruitful source of blindness during the first year of life should render the physician watchful and guarded in his prognosis.

TREATMENT.—In the discussion of a disease so dangerous to vision prophylaxis becomes the first consideration.

The lids of the new-born babe are, practically, always agglutinated by the parturient secretions. Therefore our first care is in washing. We always direct that the lids be washed with perfectly clean water and cloth, no soap being used, and particular care being exercised. This part of the washing we never fail to personally superintend. If in a few days the conjunctiva becomes red and sticky, a wash of a saturated solution of Boracic Acid is used and the eyes kept clear of all secretions as fast as it forms. With the exercise of these simple precautions, not a single case of ophthalmia has occurred within our own family practice. Whether this will always suffice we can not say. As it has done so well, we can not think of abandoning it for that of Crede's method, which consists of dropping one or two drops of a two per cent. solution of Silver Nitrate into each eye of the new-born babe. Moreover, this method is not entirely devoid of danger, as severe reaction and even hemorrhage have been known to follow its use.

We have great faith in the value of internal remedies in disease of the eyes, though the proper local means should not be neglected. Prepare for the child Aconite in the usual doses, with Gelsemium, Rhus, Belladonna, Phytolacca, Apis, Apocynum, or Calcium Sulphide, as may be

indicated. The child may also be medicated through the mother, if her health is impaired. Not unfrequently the unpleasant coating upon the tongue, the bad breath and imperfect digestion will call for Sodium Sulphite or Sulphurous Acid.

The orthodox local treatment for this form of ophthalmia is a solution of Silver Nitrate, yet it must be used with care and judgment. We have seen several instances in which blindness was caused by an indiscreet use of a silver solution. When the swelling of the lids is only moderate, and this with the watery secretions are the chief symptoms, we believe the frequent use of a lotion of Boracic Acid will be all that is necessary. In all cases, no matter how severe, frequent cleansing with a saturated solution of Boracic Acid is of paramount importance. When we say frequent, the word is used advisedly, for we mean that it must be used often enough to keep the eyes clean from secretion.

In a case of greater severity, in addition to the cleaning, cold compresses should be applied both night and day. When the secretion becomes thick, the lids should be everted and pencils with the solution of Silver Nitrate; never dropped between the lids. The action of the Silver Solution should be under the inspection and control of the physician. Dropping it between the lids endangers the cornea, which is always the object of much solicitude. When the lids are turned they will be found spongy, and will bleed easily. With the child's head well under control, the secretion is carefully washed away, the lids turned and pencils with the Silver Solution until they are whitened; the action can then be neutralized with water, or salt and water, should it be thought desirable. This should be repeated once daily. If the reaction is severe, cold applications should be applied until the child ceases to cry. The application temporarily checks the secretion; with its

reappearance the frequently cleansing with the Boracic Acid solution should be again commenced. If the cornea becomes affected, the caustic treatment should not be omitted, but with the appearance of the ulceration, Atropine or Eserine should be used, according to the location of the ulceration. Many are the troubles that now ensue. Perforation with prolapse of the iris, a general breaking down of the cornea, with an escape of the lens, staphyloma or phthisis bulbi. Even the diffuse haziness or infiltration, though it does not progress to ulceration, almost invariably impairs vision permanently.

Every means should be taken to improve and keep up the recuperative powers of the child. Calcium Sulphide is always indicated by reason of the suppuration. Comp. Syr. of Phosphates, or the Hypophosphites, is good as a tonic, and possibly Echinecea or Echafolta would find a use here. Should one eye only be involved, every precaution that would suggest itself to protect the other eye should be used.

INTERSTITIAL KERATITIS.

Interstitial, Syphilitic or Parenchymatous Keratitis is the form of inflammation of the cornea which most interests the paediatricians.

ETIOLOGY.—The disease has a constitutional origin. The cause in the majority of cases is inherited syphilis. A few cases may be ascribed to poor nutrition and bad hygienic surroundings, in which no history of syphilis, either hereditary or acquired, can be traced. Rachitis, rheumatism, malaria and trauma are occasional causes.

SYMPOTMS.—A haziness of the cornea, beginning either in the center or at the margins, or overspreading its entire surface, usually denotes the onset. A careful examination will show it to be in the substance of the cornea, and not on the surface. In place of this diffuse haziness, it may be

in spots, from which the lighter haziness extends. Photophobia and pain are but moderate in degree, but there is usually no secretion and but little lachrymation. In the more severe types blood vessels will appear in the deep and superficial portions of the cornea, and the tissues of the cornea soften. In such cases photophobia, pain and lachrymation are more intense. Iritis may be a complication. The other symptoms denoting a syphilitic taint are: the glandular enlargements, nodes on the bones, the Hutchinson teeth; fissures and rhagades about the corners of the mouth and rectum, and possibly the sunken nose and nasal catarrh.

DIAGNOSIS.—There is but little difficulty in arriving at a diagnosis. The age, appearance of the eye, and the general symptoms form a picture which can not be misunderstood, even if no definite history can be obtained.

PROGNOSIS.—The outcome will depend somewhat upon the state of the general health and the intensity of the syphilitic infection. So far as the sight is concerned, we have never seen a case recover without some impairment of vision. The cornea clears, but changes take place in the deeper structures which impair vision. Relapses are frequent.

TREATMENT.—Both constitutional and local treatment are necessary. Elsewhere we have called attention to the treatment of hereditary syphilis, and the same principles of internal and general treatment apply here.

Internally, we administer the Ammonium Iodide, when the circulation is feeble, the features pinched and contracted, and the lymphatic glands enlarged.

Berberis, when there is an associated scaly or pustular skin eruption. Calcium Sulphide, when there is any suppurative inflammation of the glands. Echinacea, when there is any inflammation of the soft tissues, with foul

smelling discharges, as would occur in a rhinitis or troubles with the throat. Syrup Iodide of Iron, when with the enlarged glands there is marked anaemia. Phytolacca, when the swelling of the glands is hard and there is soreness of the throat or mouth. Potassium Iodide, when the tongue is broad, there is a leaden pallor of the mucous membranes, swollen and indurated glands. Bryonia, when the joints are swollen and painful; pain increased by motion. These are but a few of the leading remedies called for in this disease. Indications may exist calling for Corydalis, Macrotyls, Rhus Tox., or Stillingia.

Locally, one of the best remedies is the steady, prolonged application of heat for several hours each day. The more severe the case, the longer should it be applied each day. No irritating washes are needed; in fact, they do positive harm. Atropine will be needed if any tendency to suppuration is shown. Occasionally Eserine can be used to a better advantage, especially if the tendency to ulceration is at the margin of the cornea. When hyperæmia and other acute symptoms have subsided, the ointment of Yellow Oxide of Mercury, used at bedtime, with massage of the cornea, will hasten absorption.

Time and patience are essential, the disease running a course of from three to twelve months. Our main reliance must be the internal medication, hot applications and a wise hygienic course.

CHAPTER XX.

DISEASES OF THE EARS.

Disease of the ears is of more frequent occurrence in the child than in the adult; and partial deafness, annoying the person for a lifetime, frequently has its origin in early life.

Some of these affections are marked by prominent symptoms, while others are very obscure, and run their course many times without being recognized.

Though arising from several causes, in the child they can be studied under the one heading—

OTITIS.

Otitis is very frequent in childhood, especially during the fall and winter months. It may be met in any of its types.

ETIOLOGY.—Otitis is usually a secondary disease. It is preceded by some inflammatory condition in the rhinopharynx, the inflammatory process reaching the middle ear by way of the Eustachian tube. It is also a sequel or complication of the infectious diseases. It is frequently a complication of scarlet fever, though it may be preceded by influenza, measles, simple pharyngitis or tonsillitis. It is most severe when following scarlet fever or diphtheria. It may be produced by sudden changes of temperature, injuries, and sometimes by the introduction of foreign bodies into the external ear.

PATHOLOGY.—There are several forms of inflammation of the middle ear. First, it is divided into the suppurative and the non-suppurative. The first is essentially an acute condition, an inflammation leading to suppuration and to the perforation of the tympanic membrane. The second is a chronic condition, and is usually associated, in children, with chronic catarrh of the naso-pharynx and with adenoids.

The active or acute form of otitis also varies in severity, from a simple hyperæmia of the middle ear, associated with a slight exudation of serum or mucus, the same condition existing in the naso-pharynx, to the more serious form, where the product of the inflammatory process is mucopuss or pus, and accompanied by a perforation of the tym-

panic membrane. This is the condition that so frequently complicates scarlatina.

SYMPTOMS.—The subjective symptoms of otitis are but few. They are pain and fever, but they present a wide range of intensity.

The child is very restless and uneasy, moves its head from side to side, sleeps but little, and wakes with a start, crying loudly. The pain is undoubtedly paroxysmal in character, as for a little time the child is easy, and then breaks out in a piercing cry, as if hurt.

Sometimes there is slight febrile action, with suffused eyes, stopped nose, and other evidences of cold. In some cases the child's face is flushed and the temperature increased. With the subsidence of the coryza, the Eustachian tube opens and the pain and stuffiness of the ears subside. This is "Acute Catarrhal Otitis." Unfortunately this is not always the termination. Instead of undergoing resolution, the inflammatory process may pass into an acute purulent otitis. In such a case the pain becomes more intense. There may be tenderness about the ear and the child refuses to lie upon the affected side, or allow the ear to be touched. In other instances the subjective symptoms are not very well marked, save only the symptoms of coryza, until the discharge from the ear is observed. The pain, tinnitus, impaired hearing and fever are the most constant symptoms. If we examine the membrane in the first condition, it will be seen to have undergone but slight changes. It may be a little pink or possibly red around the periphery. If it is going to progress to suppuration, the membrane will be red, and a bulging will be seen in some portion of it. A perforation may exist and yet not be seen. If there be a discharge, or much mucus or muco-pus in the canal, a perforation has taken place. An inflammation of the external canal never causes much discharge. The pus may burrow along the cartilage

and open externally behind the ear. Mastoid disease is also a complication occasionally seen, but fortunately it is not so frequent as in adults. It may accompany either acute or chronic suppuration of the middle ear. The indications of such a complication are: pulsating pain, tenderness and swelling behind the ear. The ear stands out prominently from the head. Occasionally a burrowing of the pus along the external canal and pointing behind the ear may be mistaken for mastoiditis.

Meningitis, resulting in death, is an occasional complication. It is usually secondary to a cerebral abscess or to the perforation of the antrum and the escape of the pus. The abscess at times results from an extension of the inflammation along the bone. The bones of the middle ear become affected at times; necrosis results, and the condition passes into a chronic suppuration of the middle ear.

DIAGNOSIS.—When the symptoms are typical, the diagnosis is easy. The difficulty presents itself in infancy, when both the subjective and objective symptoms are slight. Local tenderness has some significance, yet this is often wanting.

PROGNOSIS.—In the catarrhal form it is good. It is when following scarlatina, or when occurring in children afflicted with that condition known as lymphatism, that we have ever seen bad results. Complications of the mastoid render the prognosis uncertain.

TREATMENT.—Put the patient upon the use of Aconite or Veratrum in the usual doses. If there are indications for other remedies, these may be added to the sedative solution, or given in alternation. We will thus find in different cases indications for Gelsemium, Rhus, Bryonia, Belladonna, Apis, Macrotys, Phytolacca, Apocynum, Calcium Sulphide, etc. In some cases — a full tongue heavily

coated — Emesis will give the speediest relief. If the tongue is pallid and dirty, give Sodium Sulphite; if red and dirty, Sulphurous Acid.

The best local application is dry heat. This may take the form of the bag of hot water, bran or salt. It should be placed beneath a thin pillow or thick layer of cotton, and the child encouraged to lie upon it. If this is impossible, it should be bound to the ear. No douching or dropping of oils or fats into the ear should be permitted. A solution of Cocaine may be dropped into the ear occasionally, should the pain be excessive. This should be used warm.

Persistence of the fever and pain points to the probability of suppuration. Should this prove the case on examination, a paracentesis should be performed with a good reflected light, either artificial or natural. After perforation, whether artificial or spontaneous, the discharge is the object of treatment. Drainage should be maintained as perfectly as possible. The insufflation of any dry powder into the external ear in acute cases of suppuration can not be condemned too strongly. Neither should cotton be packed firmly into it. Both interfere with the object sought, which is drainage.

As a cleansing wash, a solution of Boracic Acid or Potassium Chlorate, if there is much odor, used by means of a soft rubber bulb syringe, does all that is necessary. This should be used only often enough to maintain cleanliness.

Mastoiditis calls for a Wilde's incision and poultice. As a rule, the complications and the chronic forms belong to the domain of the specialist.

FOREIGN BODIES IN THE EAR.

Children frequently get foreign bodies in the ear. Often a pea, bean, grain of corn, or other material, will be introduced purposely by the child or some companion in play.

Rarely an insect or other living thing accidentally gains entrance, and causes considerable disturbance.

SYMPOTMS.—The foreign body at first produces but little or no unpleasant feeling, but the efforts at removal, very often rough, excite the sensibility of the organ, and after a time produce an extreme irritability.

If symptoms do exist, they vary in accordance with the character of the substance introduced, the mode of introduction and the injury which they may cause. They interfere with hearing by hindering sound conduction. The degree varies with the amount of space left between the foreign body and the walls of the canal. There may also be subjective sensations, such as pain, vertigo and tinnitus, due to pressure upon the tympanic membrane. The diagnosis is made by inspection, by means of the head mirror and a strongly reflected light.

TREATMENT.—This is simple, but effective. Remove the foreign body by a jet of water thrown from a syringe. Take a large, hard rubber syringe, filled with warm water, and throw the jet into the ear with some force; the rebound causes the detachment and removal of the body. It is better that the child's head be placed in such position that the ear will be dependent.

Under no circumstances should we undertake to remove a foreign body with a scoop, forceps, or like instruments.

If a living object be within the external canal, it should be killed or drowned at once by pouring warm water or oil into the meatus.

CHAPTER XXI.

DISEASES OF THE SKIN.

The skin at birth is covered with a whitish sebaceous secretion, the vernix caseosa. The skin itself is of a purplish hue, which changes to a bright red in a few minutes

after respiration is established. This again changes to a pink color, and in a few days the icterus of infancy is seen. The epidermis soon loosens and is thrown off. The normal desquamation is scarcely noticeable, if the skin be properly oiled and bathed. We have seen it when it was so marked as to approach a pathological condition, a dermatitis exfoliativa. We have thought it at times to be due to the too free use of soap, or of a soap too irritating to the delicate skin.

The classification of skin diseases is difficult, and in this connection unnecessary. A familiarity with the lesions, both primary and secondary, and with the location and shape of skin lesions, assists wonderfully in arriving at a correct diagnosis.

MILIARIA.

Miliaria, Sudamina, or Prickly Heat, is a disease of the sweat glands, characterized by the appearance of discrete, superficially seated, small-sized, translucent vesicles, resembling seed pearls. The varieties usually described are sudamina, or miliaria crystallina, and miliaria rubra, or prickly heat.

ETIOLOGY.—The eruption is due to the obstruction of the sweat glands. This is probably caused by the glands becoming clogged by epithelium when sweating is stopped on account of fever. The lichen tropicus, or prickly heat, is due to congestion about the sweat pores and to irritation of the skin when profuse sweating is induced by warm clothing and hot weather.

SYMPTOMS.—Miliaria, or Sudamina, most generally appears as an attendant upon other diseases, more especially typhoid and the advanced stages of other fevers and inflammations. The miliary vesicle is small, not larger than a pin's head, and the contents being clear and transparent, it can not be seen well unless we look across the

surface. They are usually grouped together in patches upon the thorax and neck. They appear without any sign of inflammation or subjective symptoms. After lasting a few days they are absorbed and disappear.

Lichen tropicus, or prickly heat, is the most common and important variety. It is very commonly seen in warm weather. It consists of an eruption of small, bright-red papules, or very small vesicles upon an inflamed skin. They appear with great rapidity upon the neck, forehead, back and chest. The eruption is then attended with a disagreeable sensation of heat and itching. Although lasting only two or three days, it may keep recurring for weeks in susceptible people.

DIAGNOSIS.—The diagnosis of sudamina is easily made. Its ephemeral character, appearance during a febrile process, and absence of any subjective symptoms, are suggestive. Miliaria papulosa is recognized by its sudden appearance. High atmospheric temperature or excessive exercise attends the eruption. Tingling and itching are subjective symptoms.

TREATMENT.—Sudamina demands no treatment, being simply symptomatic of other diseases. Prickly heat is to be prevented by suitable clothing, the exchanging of flannel for cotton. The frequent use of some toilet powder, such as Starch or Boracic Acid, assists in prevention.

During an attack the bowels should be moved by a saline laxative. Relief from the itching can be obtained by an alkaline wash, such as Salt and Water, or Sodium Bicarbonate and Water. A dusting powder should be used after the bath.

ERYTHEMA.

Erythema is an inflammatory hyperæmia of the skin, attended with redness of the surface. They are the mildest of the exanthemata, and usually are not accompanied with

febrile action, though in the severer cases there is arrest of secretion and some constitutional disturbance.

There are many forms of erythema, and it is a question whether it should be regarded as a disease or as a symptom. The disease has been divided into two general classes: Hyperæmic and exudativum erythema. In the first class are included erythema traumaticum, due to an injury; erythema caloricum, to cold; venenatum, to a poison from a plant or drug; and gangrenosum. These are also classed as various types of dermatitis. In the second class we have erythema pernio (chilblains); scarlatinaiforme (roseola); intertrigo; multiforma, and nodosum. We will only consider a few of these.

ETIOLOGY.—They may be produced from mechanical irritation of the skin, but the most frequent causes are cold and arrest of cutaneous secretion, or gastric and intestinal derangements, or the ingestion of certain drugs or articles of diet.

SYMPTOMS.—The disease appears in the form of patches of variable size, of a light, superficial red color, readily effaced by pressure, and most frequently on the face, chest and limbs. In some cases they spread so as to cover a considerable portion of the body, but this is not frequent.

Subjective symptoms are hardly noticeable. There may be a burning and tenderness, but not decided itching.

Erythema Scarlatinaforme, or Roseola, is usually met with in young children, and arises from gastro-intestinal irritation, or from dentition. It comes out in the form of deep rosy-red patches about one-fourth of an inch in diameter, and circular in form. When severe, they are very much crowded together, so as to give a general red appearance to the surface, yet each one is well defined. This is sometimes mistaken for scarlatina. It may, however, unlike scarlatina, begin on the extremities, remain but a

few hours and disappear. They may continue for several days, or vanish and reappear for several days. Usually the fever is but slight, but the child shows symptoms of irritation, being cross and fretful. It may be followed by desquamation.

Erythema Intertrigo, or Intertrigo, occurs on parts where the folds of the skin come in contact. It is most commonly seen in fat infants in the folds of the neck and joints, being caused by friction and moisture. It is also common about the inside of the thighs, where the wet napkins cause and aggravate it. The sensations produced are heat and moisture.

Erythema Multiforma is characterized by the eruption or symmetrical development of macules, papules, or even nodules of various size and shape upon the extremities. In rare instances there may be vesicles or bullæ. The subjective symptoms are slight, usually only some heat and burning. The general symptoms may be quite marked: Fever, loss of appetite, chills and gastro-intestinal derangement. It often accompanies a rheumatic diathesis. The diagnostic points are: the variety of the eruption, its size, and the absence of itching.

Erythema Nodosum is preceded by some constitutional disturbance, and comes out in oval, red patches, from half an inch to an inch in diameter, most generally on the lower extremities. When more fully developed they are slightly elevated above the adjacent skin, and in a few days form small, red, painful tumors, which seem inclined to suppurate, and in severer cases give a suspicious sense of fluctuation, but at last disappear without any change of structure.

TREATMENT.—Some varieties of erythema require only the removal of the source of irritation, when further treatment is unnecessary. Usually the patient has the proper sedative in small doses, to which may be added such

remedy as may be indicated influencing the skin. If there is dullness or inclination to sleep, Belladonna is given until the eruption comes freely to the surface, and the nervous system is relieved. If the pulse is sharp, the tongue shows the red papillæ, and there is frontal pain, or burning of the surface, Rhus is the remedy. If the itching is severe, add Apis to the solution of Aconite; Gelsemium, if the face is flushed and the patient restless; Apocynum, if the eyelids are swollen; Phytolacca is given if there is soreness of the mouth and throat; the Sodium Carbonate, if there is a pallid tongue; Sodium Sulphite, if the tongue is broad, pallid and dirty; and Sulphurous Acid, if the tongue is red and dirty. Locally, we can apply a weak solution of Carbolic Acid, Salicylic Acid and Sodium Biborate, the Glycerite of Starch, or some of the dusting powders. In intertrigo the parts should be kept separated by pieces of lint, strict cleanliness enjoined, and a dusting powder used. We prefer Lycopodium, although Zinc Oxide, Boracic Acid or Starch may be used. Dusting powders in intertrigo are better than ointments.

In Erythema Multiforma, or Nodosum, we have usually prescribed a gentle laxative, with a solution of Potassium Acetate, and very small doses of Aconite. The use of the alkaline bath gives great relief, and it may sometimes be repeated several times a day.

Should there be any rheumatic pains, Bryonia, Macrotyls, Colchicum or the Salicylates should be given, according to the indications.

URTICARIA.

Urticaria, Hives or Nettle Rash, is an acute or chronic disease, characterized by ephemeral, whitish or rose-tinted wheals, surrounded by a red areola, and accompanied by intense itching.

Etiology.—The most common causes are doubtless

gastro-intestinal irritation, dentition, intestinal worms. Many medicines or articles of food taken internally, as well as a great many external irritants, will also produce it. The milder forms may be caused by sudden changes of temperature, or excessive mental emotion. Sometimes it is an acute affection, but more frequently it assumes a chronic form, and may last for months or years, reappearing on the slightest imprudence of diet or change of habits. It not only varies in intensity and duration, but also in the appearance of the eruption, in size, form, and color; but in all there is the common symptoms, intense persistent itching, and sometimes burning of the skin.

PATHOLOGY.—It is a vaso-motor disturbance. There is first a contraction, then dilatation of the blood vessels, retardation of the circulation and a serous exudation, forming the wheal.

SYMPTOMS.—Though divided into several varieties, it will suit our purpose to consider it as a whole. The eruption is preceded for a day or two by slight febrile symptoms, irritation of the stomach, and pain in the epigastrium. The eruption then comes out in the form of red or pale-red wheals or papules, irregular in shape, elevated above the adjacent skin, hard around their edges, and surrounded by a bright red or scarlet border, appearing with the greatest frequency upon the extensor surfaces, back or arms. An intolerable pruritus and burning accompany the eruption, aggravated by warmth, and usually by scratching or rubbing the part, and is sometimes so severe as to prevent the patient's sleeping. The eruption is not constant, but goes away and reappears sometimes every few hours. The disease usually continues for seven or eight days, with some constitutional disturbance during the entire period, and at last disappears, leaving but slight itching; in severe cases there may be some desquamation.

In some cases the eruption fails to come out, and the patient suffers from extreme nausea, nervous irritation (sometimes going on to convulsions), and occasionally marked febrile reaction. The swollen face and slightly mottled skin will frequently suggest hives, and we relieve the patient by bringing the eruption to the surface. When there is a retrocession of the eruption the patient is sometimes very sick, so that between the intense itching and burning when the hives are out, and the nausea and great prostration or febrile action when they go in, the patient passes a very unpleasant week. In some cases marked croupal symptoms are observed, and this becomes an important feature when the pharynx is the seat of the eruption.

DIAGNOSIS.—The wheal and the intense itching are characteristic of urticaria. In no other disease do we have it. It is only when the eruption has disappeared and we have only the scratch marks to guide us, that the diagnosis is rendered difficult. The ephemeral character of the eruption is also a diagnostic feature.

TREATMENT.—In the majority of cases the prescription will be Aconite and Belladonna until the patient is relieved. If now we substitute Apis and Phytolacca, we relieve the itching, and our patient will make a rapid recovery.

When there is severe burning as well as itching, the patient will have Rhus with the Aconite. In some of these cases the irritation of the nervous centers would call for Rhus if there was not the prominent symptom, "burning with itching."

In rare cases the evidences of accumulations in the stomach — heavily coated tongue and fullness in the epigastrium — will demand an emetic. Usually the nasty tongue and breath will be met with Sulphurous Acid, or Ammonium Sulphite.

If there is marked oppression of the respiratory apparatus, with cough and increased secretion of mucus, we may use Lobelia. Croupal symptoms are best met by an application of Stillingia Liniment over the larynx, and sometimes its internal administration in half-drop or drop doses. If convulsions are threatened, the patient should have Ammonium Bromide.

All local causes of irritation should be removed and the parts bathed with a weak solution of Carbolic Acid, Menthol or Soda Water.

When the skin is feeble, and the eruption does not appear, the patient may be rapidly sponged with hot water, before a fire, being careful to prevent chill. A hot foot-bath will sometimes give great relief. When the eruption is out, and the patient complains of excessive itching, the old-fashioned alkaline bath may be employed, or a salt water bath will sometimes give relief. Occasionally an oily preparation or an ointment will give the most relief.

ERYSIPelas.

Erysipelas is an acute and specific inflammation of the skin and subcutaneous tissue, characterized by pain, heat, redness and swelling of the affected part, and an elevated temperature and pulse.

Erysipelas might have been properly classed with febrile diseases, as in many respects it resembles them. The constitutional affection is the primary disease, and of which the local inflammation is but the outgrowth.

It is not so frequently met with in children as in the adult, but occasionally is quite a serious affection. Thus we will see it during the first week of life in erysipelatous inflammation about the umbilicus; at a later period affecting the genitalia and nates; and from two years upward attacking the extremities. It is a singular fact that chil-

dren rarely have erysipelas of the face, which is the most common seat of the disease in the adult.

ETIOLOGY.—Erysipelas undoubtedly belongs to the class of zymotic diseases in which there is a blood poison. What this peculiar poison is we do not know, or how it is generated, farther than that it seems to be produced in certain depressed conditions of the system, where there is rapid waste of tissue and imperfect excretion. When once generated, it has the power of propagating itself, and at times will become eminently contagious.

PATHOLOGY.—As above remarked, the disease is undoubtedly produced by a blood poison, manifested by the usual symptoms of fever. Following this, we have an inflammation of the skin, and occasionally of the deeper tissues. The inflammation does not at first seem to differ from that produced by other causes, further than that the circulation is more impaired. But as it advances the tissues seem to lose vitality, and the exudation is of a depraved serum rather than coagulable lymph.

SYMPTOMS.—The symptoms vary in different cases, not only in intensity, but in their order. Usually the child seems depressed for a day or two, the appetite being impaired, the breath bad, and the sleep broken. Following this there is febrile action, rising quickly and running an active course.

With the appearance of the fever the cutaneous disease shows itself, usually in the form of a red spot, where the skin is swollen, hot and painful. As the disease progresses we find the redness extending, with the same induration of the skin, and other evidences of inflammation.

Occasionally in the course of two or three days the epidermis is loosened and distended with a yellowish serum, forming bullæ of larger or smaller size, and these

rupturing, pour out their secretion, and sometimes become covered with thin incrustations. The redness usually fades, and the inflammation commences to disappear by the fifth or sixth day, leaving the epidermis wrinkled and yellowish, and at last it desquamates over the entire surface.

The fever is in some degree dependent upon the local lesion. When this is acute it runs a very active course, and gradually subsides as the inflammation passes off. In other cases the fever presents marked typhoid symptoms.

We observe another form of the disease in children of from six to twelve years. They complain of soreness of the legs and feet, and lameness, and when examined the parts are slightly swollen, the skin smooth and glistening, and presenting a peculiar mottled red and purplish discoloration. The child's health has not been good for some days; its appetite is impaired, its bowels irregular, breath bad, and it is evidently losing flesh.

DIAGNOSIS.—The peculiar redness of the skin, with swelling, and the burning heat that attends it, are characteristic. Associated with this is the marked constitutional disturbance, rendering the diagnosis certain.

PROGNOSIS.—Usually we will have but little difficulty in controlling the local and general disease, and remedies will give much satisfaction. Some cases will be quite intractable, but upon the whole the mortality will be but small.

TREATMENT.—The treatment of erysipelas illustrates the truth of specific medication, both as regards the action of the small dose, and the advantage of following special indications for the selection of the remedy. The remedies in common use are Veratrum, Rhus, Tinct. Muriate of Iron and Sodium Sulphite.

Veratrum is indicated by a full pulse, and the ordinary redness of inflammation, all the inflammatory symptoms

being marked. Apply locally of full strength, or one part to ten of Water, or a mixture of Water and Glycerine.

Rhus is indicated by the brighter redness, burning pain, vesication, sharp pulse, and irritation of the nerve centers. When indicated its action is very prompt and decided.

Tincture of Muriate of Iron is given in small doses, where the mucous membranes are red, either dusky or livid. The remedy is best given with Glycerine. This is also the remedy for the last form named, and its continuance for a few days will entirely remove the unpleasant symptoms, without local applications.

Where the tongue is pallid, broad, and covered with a pasty white coat, sometimes pitting where it comes in contact with the teeth, Sodium Sulphite is the remedy. To a child two years old it may be administered in doses of three to five grains every two hours.

In young children the best local application is soft cloths spread with fresh lard. In other cases we will find an excellent remedy in a solution of Salicylic Acid and Borax. When the erysipelatous inflammation is deep-seated, and likely to progress to sloughing, a solution of Potassium Permanganate, 3*j*, to Water, Oj., used as a wet dressing, will be found an admirable remedy.

FURUNCULOSIS.

Furunculosis is a disease characterized by the formation of one or more painful, circumscribed, phlegmonous inflammations, cutaneous or subcutaneous, and forming around a skin gland or hair follicle, and terminating in necrosis and suppuration.

ETIOLOGY.—Boils occur in diabetes, after or during the exanthemata, anaemia, uræmia and septicæmia. They may also occur as a complication in other skin diseases, as eczema or scabies. They may occur as the result of local

injury to the skin. When numerous and large, they disturb the general health.

PATHOLOGY.— Furunculosis is an inflammation of the corium or deeper tissue. It is supposed by some to occur about the hair follicles or glands of the skin. There is a blocking or stasis of the blood around the part, producing its death, and the inflammation ends in necrosis and suppuration.

SYMPTOMS.— That form that is characteristic of children is the occurrence of a number of small boils. Their principal seat is the scalp, face, shoulders and buttocks. They may occur, however, upon any portion of the body. They vary in number, and appear in crops for several weeks. They appear as painful and tender indurations, varying in size. They soon arise above the surface, are hard, and have a dark red center, which gradually fades into the sound skin. The center becomes yellow, indicating the point at which it will open. With the artificial or spontaneous opening and escape of the yellowish pus mixed with blood, the throbbing pain subsides. Boils occur in children apparently robust and healthy, but they are most common in those more or less debilitated and the subjects of digestive disturbances.

DIAGNOSIS.— There is no difficulty in forming a diagnosis. The condition from which it is necessary to distinguish them is carbuncle.

PROGNOSIS.— Always good.

TREATMENT.— Any disturbance of digestion or nutrition, when present, must first be corrected. The remedy most frequently indicated is Calcium Sulphide. Other remedies may also be needed. The broad, pallid tongue would call for Sodium Sulphite. When red and coated with a heavy fur, Sulphurous Acid. When red, with digestive disturbances, Muriatic Acid.

Frequently the kidneys need attention, and an examination of the urine is necessary. When that complex condition, lithæmia, is present, some of the Lithii Salts are indicated. Occasionally Potassium Acetate will do better.

Tonics, such as Arsenic, Comp. Syr. of Hypophosphites, Quinine or Nux, with a regulated diet, are nearly always necessary.

Locally, the object first sought to be attained is the abortion of the boil. This can sometimes be accomplished by covering them with an ointment of Salicylic Acid, or by touching them with pure Carbolic Acid, Veratrum, or Thuja. We do not like the Carbolic Acid, preferring the other methods, or in their place using the Nitrate of Mercury Ointment. When their abortion is out of the question, the part may be frequently bathed with a hot solution of Boracic Acid and instantly covered with the Oxide of Zinc Ointment, or the Compound Lead Ointment. When pointed, they should be opened and the cavity washed with an antiseptic solution, and then dusted with Aristol. They should never be violently squeezed for the purpose of expelling the contents.

IMPETIGO CONTAGIOSA.

Impetigo is an acute, inflammatory and contagious disease, characterized by the formation of multiple vesicles, vesico-pustules, or blebs, soon filled with pus, which rupture and form yellowish crusts.

ETIOLOGY.—The disease is recognized as contagious. Several cases are often seen in the same family or public institution. The causes are still doubtful. It is said to occur among the cachectic, dirty and neglected. It occurs most frequently among children, and by some it is said to be due to pediculosis.

SYMPTOMS.—The disease is seldom seen until the vesicles

are formed. Their eruption is usually preceded by a slight febrile reaction, and they make their appearance most frequently about the face, but may also appear upon the neck, buttocks, hands or feet. The eruption consists of vesicles, vesico-pustules, pustules, or bullæ of various size, and not distended, but flaccid. The smaller ones may coalesce and the larger ones exhibit a tendency to umbilication. Itching is present in but slight degree. If the vesicles are not disturbed, they dry up in a few days, leaving a yellowish crust, which, falling off, leaves an erythematous spot, which soon disappears. If the vesicles are torn by scratching, they leave a moist surface, covered with a purulent secretion or crust. This also disappears, passing through the same stages as stated before. The disease runs a course of from two to three weeks. Relapses may occur.

DIAGNOSIS.—The diagnosis is made by the appearance of the flaccid vesico-pustule, appearing upon the head, face or hand, the lightly attached crusts, the slight preceding constitutional disturbance and subjective symptoms, and the occurrence of several cases together.

PROGNOSIS.—Always good.

TREATMENT.—This is simple, but effective. The parts should be scrubbed with soap and hot water. An ointment of Carbolic Acid and Vaseline, or of Carbolic Acid and Oxide of Zinc Ointment, should then be applied to the lesions. The crusts should be removed by soaking them in hot water or some bland oil, after which the ointment can be applied.

HERPES.

Herpes is an acute inflammatory disease, characterized by the eruption of one or more vesicles, filled with a clear serum, and upon an inflamed, reddened base. Three varieties are distinguished: *H. labialis*, *H. progenitalis*, and *H. zoster*.

ETIOLOGY.—It is still undetermined whether herpes facialis is a zoster or not. It occurs with catarrhal inflammations of the mucous membranes, such as coryza, or bronchitis, with digestive derangements and various febrile diseases. The cause of herpes progenitalis is a congestion of the genital region.

Herpes zoster occurs in cold and damp weather. It is usually monolateral in its distribution, and is limited to the area of the skin supplied by a branch of a cranial or spinal nerve. It is claimed that an influence sufficient to produce an inflammation of a sensory nerve or its ganglion may be followed by the disease.

PATHOLOGY.—Zoster is usually associated with a neuritis. It is said that there are always pathological changes at some point in the corresponding nervous tract.

SYMPTOMS.—Herpes labialis is occasionally preceded by slight indisposition and fever, and hence the vesicles are often termed fever blisters or cold sores. It usually comes out at the junction of the skin and mucous membrane, about the lips, mouth, cheeks or alæ nasi. It is usually preceded for a few hours by redness, and sometimes the part is swollen and painful, or there may be burning, stinging and itching. The vesicles are of various sizes, the largest about the size of a small pea; at first they are transparent, but in two or three days become opaque and yellow, and in two or three days more desiccate, forming brownish crusts.

Herpes progenitalis appears on the external surface of the prepuce or the glans, in the sulcus formed by the integument. In females on the labia minora or inner surface of the labia majora, small inflamed spots being first noticed, which, in the course of a few hours, are covered with groups of small globose vesicles. It runs a similar course to that just noticed, but in some cases continues to reappear for years, causing great annoyance to the patient.

Herpes zoster, or shingles, is usually preceded by a few days of febrile reaction, malaise and neuralgic pains, limited, as a rule, to the areas, where the eruption will subsequently make its appearance. It is generally unilateral. It usually makes its appearance in irregular macules of a red color, which are soon covered with vesicles, and accompanied by a sensation of heat. The vesicles appear in groups corresponding to the group of macules. They appear successively, so that the process may be seen in all stages upon the same subject. The vesicles are filled with a clear serum, which becomes puriform. They desiccate and form a crust, which, falling off, leaves a red mark, that soon fades. The disease usually lasts for ten or fourteen days, and sometimes longer. Sometimes the neuralgic pains persist after the eruption has faded.

Several varieties of zoster have been described, named in accordance with the location of the eruption, such as zoster frontalis, ophthalmicus, pectoralis, femoralis, etc.

DIAGNOSIS.—The diagnosis of herpes is generally easy, the vesicles being round, prominent, and grouped together on one inflamed or red base; the symptoms of the different forms are usually sufficiently marked for their easy distinction, as above described.

PROGNOSIS.—This is good in all forms. Zoster only is feared when associated with debility.

TREATMENT.—It is generally thought that but little if any treatment is required in herpes, but many times this is a mistake, for the eruption is but a symptom of a deeper disease, and if not looked after it may leave permanent impairment of the health.

The patient may have the usual doses of Aconite with Rhus, or Phytolacca, until the eruption has ceased and the crusts are thrown off. Sometimes a day's treatment

will thus remove the disease when otherwise it might have lasted for ten days.

The same treatment may be adopted for herpes labialis, or Aconite with Phytolacca. But occasionally in both these forms there will be indications for Sulphurous Acid or Sodium Sulphite, and the general health will be much improved by their use. Herpes labialis is sometimes an unpleasant symptom.

Shingles is treated with the special sedatives and such additional remedies as may be indicated. If there is nausea and prostration from non-appearance or retrocession of the eruption, we add Belladonna; if there is severe burning of the surface with nervous disturbance, it is Rhus; with intense pruritis, Apis; with pallid tongue and soreness of the mouth and throat, it will be Phytolacca; when the tongue is pallid and dirty, Sodium Sulphite is given; when it is red and dirty, Sulphurous Acid; when there is sharp intercostal neuralgia, Bryonia; when this is associated with dryness of the skin, Asclepias Tuber.

The milder forms occurring about the lips should be sponged with hot water, and followed by an application of a Mild Zinc Ointment, or Rose Ointment. It may be protected by Collodion or an Isinglass Plaster. About the genitals ointments are not so well tolerated. Lotions should be used. It is frequently cured with Soap and Water, a good Castile, or Asepsin Soap; sometimes we order a solution of Borax and Rose Water, or Salicylic Acid with Borax, followed by the use of a dusting powder, such as Bismuth, Zinc Oxide, or Lycopodium.

In herpes zoster, we protect the vesicles by an application of Collodion and Morphine. This has some anodyne properties as well. It is also advisable to protect the affected area from the clothing by means of a soft bandage. In place of the Collodion, the eruption can be well covered

with some dusting powder and protected by the bandage. These applications will do all that can be desired.

ECZEMA.

Eczema is a non-contagious inflammation of the skin, sometimes acute, more often chronic. It is attended with itching, burning, desquamation, and an exudation of serous or sero-purulent fluid beneath the cuticle or upon the denuded surfaces. The primary lesion may be macules, papules, vesicles or pustules, singly or simultaneously. It is attended with crusting, and after resolution leaves no cicatrices.

ETIOLOGY.—This is the most frequent and important disease of the skin we are called upon to treat in early life. Like its symptoms, its causes are numerous. In children the skin is delicate and easily affected by external irritants. In some children there appears a susceptibility to eczema from the slightest cause; yet it is not an hereditary disease. It occurs in the fat, healthy, robust child, as well as in the flabby and ill-nourished one. The causes may be both external and internal. Among the external causes we have the heat of the sun, water, acids, alkalis, traumatism and parasites. We have seen obstinate cases caused from the use of a cheap toilet soap.

Of the internal causes, the most common and active are: digestive or intestinal disturbances, resulting from over-feeding or the ingestion of too much fat, or in some instances too much farinaceous food. It may also result from reflex irritation, such as accompany dentition or genital irritation.

PATHOLOGY.—The pathological changes in eczema are those of an inflammation of the skin. The first condition is a hyperæmia of the affected part, as expressed by the varying shade of redness observed. Then an exudation.

This is expressed by the exudation or ooze of serum, by the fluid of the vesicle, or by the thickness of the skin when pinched up between the fingers and thumb. The superficial location of the disease is the reason there are no scars left after recovery.

SYMPTOMS.—The symptoms of eczema are numerous, as well as are the varieties. The essential symptoms are the same as in an inflammation of any tissue. They are: increased heat, pain, redness and swelling. To these four pathognomonic symptoms of inflammation should be added two more; they are, itching and moisture. In every case, no matter where it is located, all or nearly all of these symptoms will be present.

The disease usually begins suddenly, without much, if any, constitutional disturbance. Frequently the first symptom that attracts the attention is the itching. The skin, if examined, is reddened and possibly scaly, or covered with papules, vesicles, pustules, or is moist.

The tendency of eczema is to form patches, which are infiltrated and of all shapes and sizes. The disease pursues no definite course. It may get well in a few weeks or months, or pursue a chronic course. Any portion of the skin may be affected, but it shows a tendency to occur in the flexures of the joints, on the face, scalp, or behind the ear.

The subjective symptoms are, itching, burning, and a feeling of heat and tension. There are many forms of eczema, none of them, however, unchanging in their form. One form may subsequently develop into another. Often a vesicular eczema may break down and develop into a pustular and subsequently into a squamous eczema. We will briefly describe those forms only which most interest the general practitioner.

Eczema Erythematosum.—This begins as one or more ill-defined red patches, with swelling and a variable degree

of itching. Its usual site is the face, and the oedema may be of such an extent as to nearly close the eyes. The skin is thickened and of a dull red color. Vesicles may develop. Resolution is finally effected by desquamation. Variations in its course are numerous. Scratching will produce a change in the symptoms, which should be noted. Scratch lines and excoriations, with the oozing of serum, blood, scales and crusting, will be seen.

Eczema Papulosum.—This has also been known as lichen simplex. It consists of an eruption of small, confluent papules, at times capped by a vesicle, upon a reddened, thickened base. This form is especially noted for its itching. While considered as one of the dry forms of eczema, the itching is so intense that the patient changes its nature by scratching. The irritation produces oozing, which affords some slight relief from the intolerable itching. The oozing stains and stiffens the clothing. This form of eczema occurs usually in adults, upon the limbs, back and scrotum.

Eczema Vesiculosum.—This is the most common and characteristic form, and as its name indicates, the primary eruption consists of the formation of minute vesicles upon a reddened surface. The parts involved feel at the outset hot, sensitive and intensely itchy. Soon small-sized vesicles appear upon a reddened base. The vesicles group and soon rupture, and there is exuded a clear, sticky fluid, which dries into a yellow crust. Crops of new vesicles succeed the first, each followed by the same symptoms. Sometimes, when the crust is removed or prevented from forming, there is a weeping surface, which fact has given to this form of the disease the name "Eczema Madidans," or "Rubrum." The subjective symptoms of this form are, more or less intense itching and burning. This form has a preference for the softer portions of the skin, flexor surfaces of the limbs, face, and behind the ear.

Eczema Pustulosum.—This form is sometimes called "Impetigo." It is quite common in children, appearing upon the face or scalp. Usually a crop of vesicles appears, which quickly enlarge and become puriform. These burst and the fluid dries into a yellowish-green or dark-colored crust. Infiltration occurs, and the itching, which is characteristic of all forms of the disease, is not so intense. When present upon the face or scalp, the lymph glands of the neck are commonly enlarged.

Eczema Squamosum is the final stage through which nearly all the forms pass before recovery. The skin is red, dry, and covered with thin and variously sized scales.

Eczema Intertrigo we have classed with the erythema. Eczema is again divided into the acute and chronic forms. The chief difference to be noted relates to the intensity of the inflammatory action, the tendency to recurrence, and the persistency of the symptoms.

DIAGNOSIS.—Usually the diagnosis of eczema is readily made. It presents such a variety of forms and symptoms, however, that a differential diagnosis between it and a large number of other cutaneous diseases is at times difficult. If the prominent symptoms of eczema, namely, redness, itching, thickening, moisture, crusting and cracking, are remembered, it will prove a great aid in diagnosis. The tendency to occur upon the flexor surfaces, in the folds of the joints and between opposed surfaces of the skin will also prove of assistance in forming our conclusion.

PROGNOSIS.—We can always give reasonable assurances of recovery if the patient or parents will intelligently carry out the instructions. Some chronic cases prove very obstinate, and time is a necessity. Every case, however, needs careful study, and attention paid to the various functions of the body. Especially does this apply to digestion. Relapses are frequent and unavoidable.

TREATMENT.—The treatment of eczema is hygienic, dietetic and medical, the latter including both internal and external medication. Plenty of fresh air and the avoidance of all sources of external irritation, so far as is possible, is one of the first considerations in the cure of eczema. This precaution applies to external medicinal applications as well as to clothing or the use of improper soap.

An investigation of the diet is also necessary. The diet should be nourishing, but not too stimulating. It may be necessary to limit the amount of meat or fats, or to avoid certain articles of diet which cause indigestion. Constipation should be relieved, if present, and elimination of waste by means of the kidneys encouraged.

The internal remedies that have been used in eczema with reputed success are numerous. The only safe and rational plan is to treat the patient as we find him. In eczema, no matter what the type may be, we follow the indications for our remedies.

Arsenic in the form of Fowler's Solution has been used indiscriminately in eczema. It is only useful in the chronic forms, when the skin is inelastic, dry and scaly.

Apis, in acute forms, when there is stinging pain and itching.

Berberis Aquefol., in chronic eczema, associated with dyspepsia and debility. It is also useful in the scaly and pustular forms.

Calcium Sulphide, in the pustular forms, when there is an inflammation of the cellular tissues and it is associated with boils.

Cod-Liver Oil is often necessary in feeble, debilitated children, suffering from malnutrition.

Corydalis, in chronic cases, when there is feeble digestion, debility and enlarged glands.

Iris, in chronic forms, when there is an enlarged thyroid.

Iron, when there is anaemia, pale skin and mucous membrane. We prefer the Syrup Iodide of Iron in skin diseases.

Phytolacca is indicated by the enlargement of the lymphatic glands and the patchy tongue.

Rhus Tox. is used in the acute cases, where there is burning and tingling of the affected surfaces, which are of a bright red color.

Many more remedies can be, and are, successfully used beside those mentioned. We must select them, however, with the same care we would exercise in any other class of diseases. There are, and can be, no specifics for that protean disease, eczema.

The local applications are selected with the same care. It will not do to apply a stimulating lotion or ointment to an acute eczema. They ought to be reserved for the chronic forms. In acute eczema we apply such lotions as Salicylic Acid and Borax, a weak solution of Carbolic Acid, or dilute Liquor Plumbi Subacetatis. If there is crusting, the crusts should first be removed by an application of some bland oil, then make the proper local application. When there is much oozing and the surfaces are moist, red and itchy, especially when located in the folds of the skin or joints, we prefer a dusting powder, such as Lycopodium, Bismuth or Corn Starch.

In the subacute forms, ointments can be used. We like the Oxide of Zinc Ointment as a base, in which Salicylic Acid, Echafolta, Subnitrate of Bismuth, Menthol, or any desired remedy can be incorporated.

In the chronic forms our ingenuity will be taxed to its utmost. It is now that Tar, Oil of Cade and the Brown Citrine Ointment will be useful.

In acute cases, Water and Soap must be used sparingly, but these are applicable in chronic cases.

PEMPHIGUS.

Pemphigus is an acute or chronic disease of the skin, characterized by the eruption of crops of bullæ upon an apparently sound skin, and often accompanied by febrile or other constitutional symptoms.

ETIOLOGY.—It occurs at all ages, but most frequently in infancy and childhood. It occurs in males and in those debilitated from any cause. The causes are obscure.

PATHOLOGY.—The lesions are superficially seated. The contents of the blebs are at first serous, and may later contain blood and pus.

SYMPTOMS.—In the acute form the blebs appear soon after birth, or, as is claimed by some, even before birth. It may attack any portion of the body, the face, hands and feet usually escaping. The conjunctiva and mucous membrane of the mouth may become implicated. In one of my own cases the blebs appeared the second day after birth, first on the arms, successively attacking the trunk and lower extremities. Underneath the blebs the rete mucosum is exposed, and has a red, glistening hue. Excoriations occur after the rupture of the blebs. In the case mentioned, constitutional symptoms were severe. They consisted of febrile reaction, convulsions, diarrhoea and icterus. A form of the disease, known as pemphigus neonatorum, is described, in which the lesions are ill developed. They appear soon after birth in cachectic children, subjected to poor hygienic influences. These infants usually die in a few days.

DIAGNOSIS.—The diagnosis is to be made by the exclusion of other bullous diseases. We regard the appearance of bullæ upon a sound skin, without any other antecedent eruption, such as erythema, or an inflammatory base, as the distinguishing feature.

PROGNOSIS.—This is uncertain. The case referred to eventually recovered, though such a result is frequently doubtful.

TREATMENT.—The indicated remedy must be given. In the milder form of the disease, *Rhus* or *Phytolacca* will be sufficient to effect a cure. In cases where the face is full and purplish, *Baptisia* may replace the *Rhus*.

If the tongue is pallid and dirty, give Sodium Sulphite; if red and dirty, Sulphurous Acid will be the remedy. If the disease persists, we may prescribe Fowler's Solution. In some cases Cod-Liver Oil will be of service; in others the Hypophosphite of Lime, Compound Syrup of the Hypophosphites, or some preparation of Malt after meals to aid digestion.

If occurring in a cachectic infant, nourishment and tonics, such as the Syrup of Phosphates, Iron, or *Nux*, must be given. In our own case we treated the symptoms as they arose.

Locally, a bland, unirritating dusting powder should be used. Ointments, no matter how mild, aggravated the conditions. Our best success was achieved by using a lather of Asepsin Soap. We used this twice daily, even after the blebs had broken.

TINEA TRICHOPHYTINA.

Ringworm is a disease of the skin and hair. It occurs most frequently in children. It is produced by a vegetable fungus, the trichophyton. It is customary to name the disease to correspond with the region upon which it appears. We will briefly describe only two varieties, *Tinea Circinata* and *Tinea Tonsurans*.

ETIOLOGY.—This has already been referred to. It is due to contagion, the transfer of the fungus to the

unaffected. The contagion may be direct from person to person, or by means of towels, sponges, brushes or clothing.

PATHOLOGY.—The fungus has its habitat in the epidermal structure of the skin. On the general cutaneous surface it is so superficially seated as to be readily destroyed. When it attacks the hair and the nails, it penetrates so deeply that it is much more difficult to destroy it.

SYMPTOMS.—*Tinea circinata* is the simplest and most easily cured form of ringworm. The symptoms vary according to the temperature and to the external irritants to which the part affected is subjected.

It begins as a small, pale red, slightly raised spot, and spreads out into a round, sharply defined, scaly patch. It is often slightly raised above the level of the integument. The center is paler, apparently unaffected. The ring advances in size, with a raised border that may be vesicular, crusted, papular or scaly. After a time it ceases to spread. The edges of the ring become broken in places and the disease spontaneously disappears. The face, hands and neck are the most common sites for its appearance. The only subjective symptoms are slight itching and burning.

Tinea Tonsurans, or *Capitis*, is confined almost exclusively to children. In this form the fungus finds its way into the hair follicles. It begins as a small vesicle or papule, surrounding a hair, which soon increases in size, forming a circular patch. This patch is red and covered with whitish, grayish, or dirty yellowish scales. Inspection of the patch shows the hairs ~~off close to the scalp, so that it appears~~ healthy hairs are sometimes seen. The patches vary greatly in size.

than a dime, or they may be so large as to denude nearly the entire scalp. The larger patches are formed by the coalescence of several smaller ones.

The course of the disease is chronic. It does not produce permanent baldness.

DIAGNOSIS.—*Tinea circinata* is so distinctive in its appearance as not to be readily mistaken for any other skin lesion. In ringworm of the scalp, the branny scales, clumps of hair and shape of the invaded area are distinctive features.

PROGNOSIS.—The prognosis is good, when treatment is judiciously and thoroughly carried out. It frequently proves tedious, and drags wearily along, but all cases ultimately recover.

TREATMENT.—The first form is quite readily treated. We direct that the patch be scrubbed with Soap and Water, using generally the Asepsin Soap. A solution of Bichloride of Mercury and Tr. Myrrh, two grains to the ounce, is then applied. If objections be raised to the staining caused by the Myrrh, the Mercury can be dissolved in Alcohol. A five or ten per cent. Salicylic Acid Ointment will answer the same purpose. We have seen old women cure it by an ointment of Verdigris and Lard. If the prescription be too homely, the Oleate of Copper can be substituted. It is said the local application of Iris will cure it.

Tinea Capitis is more obstinate to treatment. The hair should be cut short for some distance around the infected area, and the entire scalp frequently washed with some antiseptic soap, such as the Asepsin, Carbolic or Mercurial Soaps. Then apply the antiparasite. Those recommended for the first variety will answer the purpose. They are more serviceable when applied in solution than in an ointment. Should considerable irritation of the

scalp ensue, some soothing application can be temporarily used. Care must be exercised that the disease be not spread to other members of the family.

SCABIES.

Scabies, or itch, though a vesicular disease, is produced by an animal parasite—the acarus scabiei—and hence, as this insect possesses a very tenacious vitality, the disease is rendered contagious by its transmission from one to another. The acarus is usually found a short distance from the vesicle, in a small furrow leading from it. With good sight or a magnifying glass, it can be seen as a small, round, grayish body, sometimes moving, sometimes at rest. Under the microscope, its body is seen to be oval, the back convex and marked with curved lines, its head covered with fine hairs, and eight legs passing from its abdomen. The insect passes from one part to another by burrowing under the epidermis, but is only conveyed to distant parts by the fingers, after scratching, and by the clothing.

ETIOLOGY.—The disease is due to the irritation set up by the acarus scabiei and by the scratching employed to relieve it. It is contagious, and is introduced upon the body of an individual immediately from the skin of another infected man or animal. The vesicles, papules or pustules about the burrows are directly due to the acarus.

PATHOLOGY.—The pathology of the eruption induced by the parasite is that of the various phases of the exudation. The main differences between scabies and other eruptions of a similar type depend upon the peculiarity of the exciting cause of the former disease.

SYMPOTMS.—Scabies almost always makes its first appearance between the fingers and at the front part of the wrist, in the form of small pointed vesicles, containing

a clear, limpid fluid, and a very fine line leading from it, and marking the situation of the acarus. An intense sensation of itching attends their appearance, which is worse when the patient is warm or in bed, and the patient can not resist the inclination to scratch or rub the part—though this sometimes gives rise to a sensation of smarting if too severe. As the disease progresses, the irritation of the skin by the nails usually produces suppuration in the vesicles, the result being the formation of larger or smaller scabs, and some inflammation and stiffness of the skin. In severe cases we occasionally see in the inter-space between the fingers a large festering surface, covered with thick scabs, and the hands so stiff and painful that they can hardly be used. Sometimes the itch is confined to the hands, but in others it is conveyed to the flexures of the joints, to the perineum, around the anus, and in fact wherever the skin is thin and delicate. In all these situations we may have the suppurative action above named, so that occasionally, instead of a mild vesicular disease, the patient will be covered with foul, painful, ulcerating sores.

Itch never terminates spontaneously, but may last for years. In some cases it never passes the vesicular form first named, but in a majority, especially where cleanliness is neglected, it goes on to the formation of hard scales and induration of the skin.

DIAGNOSIS.—The diagnosis of scabies is generally not difficult. The vesicle is solitary, and its location between the fingers, upon the front part of the wrist, in the axillæ and on the genitals are usually sufficient to form the diagnosis.

The sulcus passing from the vesicle in itch is a good diagnostic feature, though not usually very well marked. In the severer stages of the disease there would be

difficulty in the diagnosis were it not for the constant reappearance of the disease in its original form.

TREATMENT.—The object of treatment is to destroy the itch insect, and whatever will accomplish this with the greatest certainty and in the least time will prove the best remedy. Sulphur has formed the basis of most applications, and is probably the best remedy. We may use it in the form of an ointment mixed with lard, or with an alkali, as—℞ Sulphur Sub. $\frac{5}{ij}$, Potassium Carbonas $\frac{5}{j}$, Lard $\frac{3}{vii}j.$; mix. Or, ℞ Prepared Chalk $\frac{5}{iv}$, Sulphur, Tar, *aa.* $\frac{5}{vj}$, Soft Soap, Lard, *aa.* $\frac{5}{xvj}$; mix. These ointments should be thoroughly applied to the parts affected. It is hardly sufficient to say cleansed with soap and water, for it requires a thorough saturation of the affected part with soap, and then its removal with soft warm water (soft soap is best). The parts should be thoroughly dried before the ointment is applied, and it may be toasted in before a fire. If now the patient's clothing is entirely changed, and the old clothes boiled, we may expect an immediate cure; if not, the process should be repeated.

I have used a combination of—Potassium Sulphide $\frac{5}{ss}$, Oils of Rosemary and Lavender, *aa.* $\frac{5}{j}$, Lard $\frac{5}{vj}$, mix, and apply as before. Cazenave states that after repeated trials they determined that the two following formulæ yielded the most satisfactory results—℞ Essence of Peppermint, Rosemary, Lavender and Lemon, *aa.* gtt. iv. to gtt. vj., Alcohol, $\frac{5}{jss}$, weak infusion of Thyme, Ovj.; it was freely used, and the cure resulted in eight days. ℞ Sulphur Iodide, Potassium Iodide, *aa.* $\frac{5}{jss}$, Water Oij.; the mean duration being six days. They say, whatever the lotion employed, it is necessary not only to wet the affected parts, but to prolong its application, so as to produce that kind of maceration which is required to destroy the insect. A solution of Sulphur & Lime, $\frac{5}{ij}$.

to the pint of Water, is very efficient, the cure being effected sometimes with three or four applications.

In the milder forms of the disease no internal treatment is necessary, but the patient should be guarded against cold, dampness, and sudden changes of temperature, and change his entire underclothing every day. In the more persistent cases we may give equal parts of Sulphur and Cream of Tartar, to the extent of keeping the bowels open, and in some cases where, the patient is cachectic, the bitter tonics and Iron.

NÆVUS.

A nævus is a congenital mark or growth in the skin, which may be either pigmentary or vascular.

ETIOLOGY.—We can only account for these malformations upon the theory of nerve influence. We regard them as anomalies. The popular name of mother's mark exhibits the popular opinion regarding their cause.

SYMPTOMS.—The most common form of nævus is a discoloration of the skin, from an increase in the size of the blood vessels. It may be located upon any part, and usually increases in size as the child grows. It is composed mainly of vascular tissue. In some cases it is so large at birth that it is useless to interfere, as where it involves one-fourth, or sometimes one-half of the face. In other cases it is but the size of a five or ten cent piece, and frequently not larger than a grain of wheat.

There is much difference in the rapidity of growth. In some it is very slow, so that the spot will not have doubled in size to adult years; in others it grows rapidly, and will have doubled its size the first month. In the first operative interference is not so necessary, and may be postponed; in the second the nævus should be removed as early as possible.

The vascularity varies in different cases. When it is large, so as to form a patch the size of the hand, it is called nævus flammeus. In these much care should be used to prevent hemorrhage in any operation that may be undertaken.

In others the disease is wholly confined to the capillaries, nævus simplex, and the operation outside of the spot will not cause greater hemorrhage than for any other purpose.

The bright vivid coloration is met with in those cases where the arterial capillaries are involved; the purplish discoloration where the veins are dilated.

We rarely meet with a case upon the skin where the growth is such as to form a red tumor, projecting from the skin. But when it is at the junction of the skin and mucous membrane, as sometimes of the tongue or mouth, and occasionally about the reproductive organs, we frequently find it assuming the form of an erectile tumor, angioma cavernosum. Occasionally, the structure gives way in such cases, and there is profuse hemorrhage.

PROGNOSIS.—The results depend largely upon the methods employed for their removal.

TREATMENT.—A great many plans of treatment have been recommended for nævus. The most commonly adopted are by excision, strangulation by ligature, and removal with escharotics.

Where the growth is not markedly vascular, the smaller capillaries being alone involved, the best plan is to excise the growth. Where the tissues are loose, or when the growth is oblong or oval in form, the edges may be drawn together with sutures and union obtained without any scar.

If the surgeon inserts his ligatures before operating tried through the

sound skin, and beneath the nævus, drawing the sutures through and clipping them at proper length. Enough are inserted in this way to insure an arrest of bleeding.

Strangulation by ligature is performed by transfixing the base of the growth one or more times, and tying it in separate parts so tightly as to cut off the circulation.

Probably Nitric Acid is the best caustic for the removal of nævi. Sir P. Brodie remarked: "Caustics may be used with advantage in congenital tumors, nævi, etc. Little vascular spots on children's faces are an object of anxiety. If you look at these, you will see one large vessel and several branches supplying it. You may destroy them in the following manner: Take a glass pen [a pine stick pointed answers the same purpose] which will hold Nitric Acid, and apply it to the principal vessel, puncture it, and insert into the puncture a fine point of Potassa Fusa; a moment's touch will be sufficient to destroy the vessel; if the Potassa extends further than you intended, apply Vinegar. You may thus obliterate the vessel without leaving a scar. There are some congenital nævi abounding in the skin, formed by an intricate mesh of vessels; the skin is elevated and of a mulberry color. If these are of a large size, they must be destroyed by ligature or the knife; if of smaller size, you may use caustics not unprofitably. The Nitric Acid is the best application; this makes a slough, the blood coagulates, and the parts become indurated. This is only applied when nævi are of small size. In subcutaneous nævi, which are not of the same color, but purple, caustics may be applied to effect their destruction, whether of a large or small size; the great object is to destroy them with caustics rather than the ligature. These nævi have been cured by application of vaccine matter, which acts by producing a slough. You may cure these subcutaneous nævi upon the same principle; puncture them with a finely-pointed

lancet, then having a probe armed with Silver Nitrate, introduce it into the puncture — the caustic presently causes sloughing, and the vessels are obliterated."

The removal of nævi by the use of hypodermic injections into the growth has been strongly recommended. The solution of Persulphate of Iron has been employed in this way, and it is claimed with great success. Thuja or Carbolic Acid may be thus used. One fatal case, however, has been reported, in which the death was evidently due to the injection.

When the nævus is quite superficial, its removal may be attempted by the use of a strong Tincture of Iodine. Apply this daily with a camel's-hair brush.

Multiple punctures with a red-hot saddler's awl, or the point of a Paquelin cautery, or a galvano-cautery, are methods frequently employed with success. Electrolysis is advised, and is probably the best method.

Angioma cavernosum is best treated by excision. We have seen injections tried upon them, but never with success.

CHAPTER XXII.

RHEUMATISM.

Rheumatism in children does not always manifest itself by the characteristic symptoms noted in the adult. Arthritis may be slight or altogether absent. The articular symptoms, whether acute or subacute, are but a few of the manifestations by which it makes its appearance in the child. Among the rheumatic manifestations noted in children are: pericarditis, endocarditis, tonsillitis, chorea and erythema. Endocarditis is a fairly constant and representative rheumatic manifestation in childhood.

Owing to its vague and indefinite symptoms, rheumatism is frequently overlooked in children, until some heart lesion awakens us to a full realization of the disease and of our duty.

ETIOLOGY.—The drift of medical opinion is toward regarding it as an infectious disease. The disease is rare under five years of age. After this it is more common, and occurs with increasing frequency until puberty. The most common exciting cause is a chilling of the surface of the body. It is said to be more prevalent in cold and temperate climates, and although prevailing at all seasons of the year, it is more frequent in the spring and winter months. Excessive muscular exercise is sometimes an exciting factor. Heredity is an important predisposing factor, as well as are unhygienic surroundings and insufficient food.

It is more common in early life than is generally supposed, it being overlooked on account of the slight development of joint symptoms. One attack predisposes to another.

PATHOLOGY.—The exact method by which rheumatic manifestations arise is obscure and unknown. The general trend of opinion is, that it is due to an accumulation of lactic acid in the blood. Possibly the excretion of some normal element by the skin is interfered with by the action of cold. Its destruction is then accomplished by oxidation. It accumulates and acts as an irritant to the joints, serous membranes and other tissues. The alterations of the pericardium and endocardium present the ordinary signs of an acute inflammation.

SYMPTOMS.—The typical symptoms, such as the swollen, tender joints, fever and profuse acid sweats, are rare in children under eight or ten years of age. The onset is not very acute, and the temperature, as a rule, is but

slightly elevated. The swelling and pain in the joints are very moderate, and may be entirely absent. Neither does the arthritis involve the several joints as it does in the adult. The number of joints affected may be small, possibly a single one, and may not be severe enough to keep the child in bed. The pain may be confined to a stiffness of a few large joints, such as the knees or ankles, sufficient to render the child disinclined to walk. It may only be vague muscular pains, commonly known as growing pains. In such cases a history of previous attacks or a rheumatic family history assists us in forming a conclusion. An endocarditis or pericarditis renders the diagnosis positive. We have under our care at this writing a child nine years old with a pericarditis, preceded for some time by vague muscular pains, to which little attention had been paid. They were called growing pains, and supposed to be the result of an undue muscular exertion.

Cardiac symptoms may follow, when the arthritic symptoms are very mild, or even absent. They may even precede them. There is no regular order or sequence of rheumatic symptoms, as in the adult. Endocarditis is the cardiac difficulty usually found. It is said to attain its maximum as a rheumatic affection in childhood, arthritis its minimum.

Pericarditis is shown by the excited, turbulent, irregular action of the heart and the quick pulse. There is cardiac pain, dyspnoea, restlessness and distress. Friction murmurs are heard. There is increased dullness and muffling of the heart sounds, with effusion.

Endocarditis will be evidenced by an endocardial murmur, usually at the mitral valve. Frequently there is also a reduplication of the second sound. The heart should always be carefully watched in children when there are any articular symptoms.

Among rheumatic affections in children is enumerated

torticollis. A rheumatic torticollis usually comes on suddenly. It is a continuous spasm, with considerable muscular soreness, and disappears in a few days. Anæmia also is a fairly constant symptom. The connection between chorea and rheumatism has been alluded to in the discussion of the former disease.

Tonsillitis, purpura, and certain types of erythema are also rheumatic symptoms in childhood.

DIAGNOSIS.—When the case presents the typical symptoms of slightly reddened, swollen, tender joints, elevated temperature and profuse perspiration, there is no difficulty in making a diagnosis. Unfortunately this is not always the manner in which it presents itself, and we must often be guided rather by an association of symptoms which appear unrelated to each other. The previous history of the patient, as well as the family history, assist us in arriving at a conclusion. It is always best to examine the heart of children presenting any rheumatic symptoms. It is too frequently overlooked in them.

PROGNOSIS.—Rheumatism in children is seldom dangerous. When lesions of the heart arise, it increases the danger, and will often lead to serious consequences.

TREATMENT.—Children affected with rheumatism should be confined in a well ventilated room in the house, no matter how mild the attack. This is one of the best means of protecting the heart. If fever be present, they should be confined to a bed as long as it continues. The diet should be light, and consist principally of nitrogenous foods, of which milk in abundance is the best. Flannel underclothing should be worn by those predisposed during the entire year, simply changing the weight of those worn in summer. The feet should be well protected and kept dry and warm. When the joints are inflamed and painful, use dry heat. We like the hot salt or hot water bag.

Internally, many remedies are suggested. The anti-rheumatics are administered as referred to in the fore part of this work. When there is a high temperature and fast pulse, Aconite or Veratrum is given, either in combination or in alternation with one of the anti-rheumatics. Aconite, when the pulse is small and frequent; Veratrum, when it is full and bounding. We should not lose sight of the fact that these are our very best remedies when either acute pericarditis or endocarditis manifests itself.

Macrotys has long had a well deserved reputation as a remedy in rheumatism. It has its best effects when the disease is confined principally to the muscles. There is muscular pain in the back and limbs, headache, skin soft and moist.

Bryonia, when the pains are sharp, confined to the joints and aggravated by motion. The pulse is hard and the right cheek flushed. Rheumatism of the intercostal muscles, pleura or pericardium.

Apocynum, when with the rheumatic pains there is œdema, a glistening and blanched skin.

Sticta, when the pain is chiefly in the shoulders and occiput, and aggravated by turning the head; rheumatic torticollis.

Phytolacca, in tonsillitis, when probably of rheumatic origin. The lymphatics are enlarged.

Rhus Tox. is very efficient. There is the sharp, burning pain in the affected parts, which are bright red and glistening. The pulse is small and sharp. There is frontal headache, and the tongue is red and pointed with prominent papillæ.

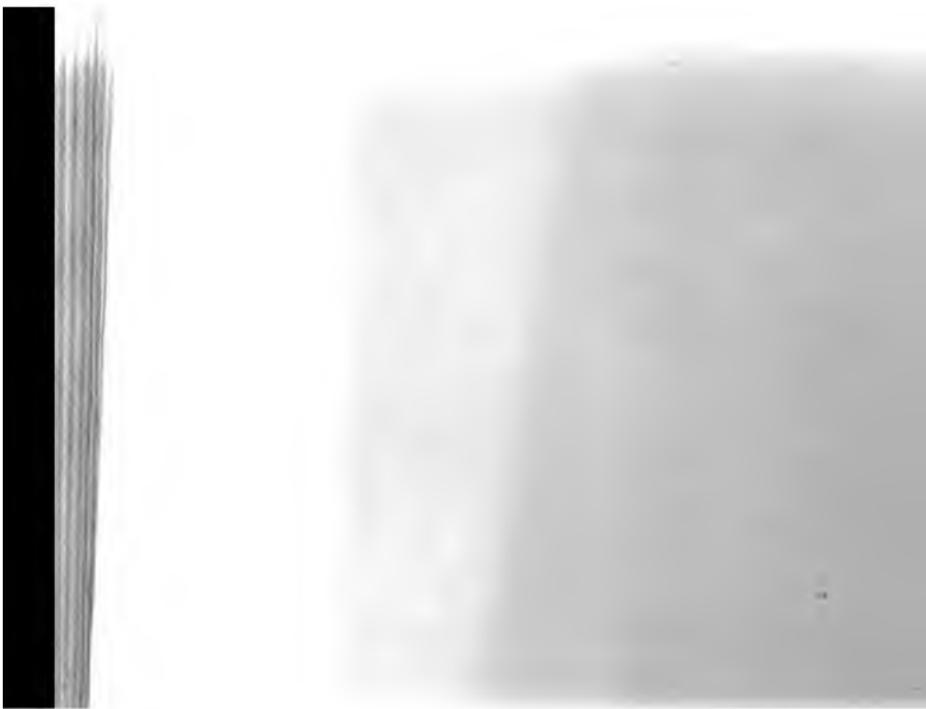
Salicylic Acid is a routine remedy for rheumatism. We use that prepared from the Oil of Wintergreen, combining it with an alkali. It is indicated when the tongue is full, broad, leaden colored or purplish; temperature high.

During the acute disease acids are frequently indicated. This is met by allowing the patient to drink lemonade freely. In subacute and chronic cases the alkalies are also called for. The alkaline diuretics are then used for the purpose of increasing the flow of urine and hastening elimination. In children Potassium Citrate is preferred.

Anæmia calls for some preparation of Iron, Cod-Liver Oil, or the Syrup of Hypophosphites.

With an early recognition and proper attention the heart will not be so frequently affected.

When pericarditis or endocarditis does occur, it should be managed as indicated in the chapter devoted to "Diseases of the Heart."



INDEX.

- A** BSCESS, cerebral 570
 hepatic 242
 perityphilitic 212
- Acarus scabiei 600
- Acetate potassium 69
- Acetous, emetic tincture of 55
 tincture of lobelia and sanguinaria 55
- Acid bath 38
- Acid, carbolic 79
 nitric 87
 salicylic 82
 sulphurous 79
- Acids 41, 83
- Aconite 25, 39, 44
- Acute atrophic paralysis 416
 Bright's disease 323
 bronchitis 278
 broncho-pneumonia 286
 catarrhal otitis 569
 endocarditis 313
 gastritis 162
 gastro-enteritis 180
 hydrocephalus 389
 interstitial nephritis 323
 meningitis 383
 myelitis 411
 nasal catarrh 254
 nephritis 323
 parenchymatous nephritis 323
 peritonitis 244
 pharyngitis 146
 poliomyelitis 416
 purulent otitis 569
 rachitis 124
 rhinitis 254
- Adenitis 427
 definition of 427
 varieties of 428
 simple 428
 diagnosis of 429
 etiology of 428
 pathology of 428
- Adenitis, simple, prognosis of 429
 symptoms of 428
 treatment of 429
- tubercular or chronic 430
 diagnosis of 433
 etiology of 430
 pathology of 430
 prognosis of 433
 symptoms of 431
 treatment of 433
 in scarlatina 478
- Adenoid growths 150
 diagnosis of 152
 etiology of 150
 in chronic tonsillitis 153
 pathology of 150
 prognosis of 152
 symptoms of 151
 treatment of 152
- Albuminuria in chronic nephritis 330
 in diphtheria 443
- Alkaline salts 42, 83
 sponge bath 37
- Aloes 67
- Alstonia constricta 86
- Ammonium, bromide 16
 carbonate 22
 iodide 20
- Amygdalus 57
- Amyloid liver 241
- Anatomy 108
- Angioma cavernosum 604
- Antiperiodics 84
- Anti-rheumatics 81
- Antiseptics 78
- Anuria 339
- Aortic regurgitation 320
 stenosis 320
- Apis 71, 77
- Apocynum cannabinum 33, 82
- Apparatus, digestive 4
 excretory 4

- Appendicitis 212
 definition of 212
 diagnosis of 214
 etiology of 212
 pathology of 213
 prognosis of 215
 symptoms of 213
 treatment of 215
- Aphous stomatitis 136
- Arsenic 77, 87
- Arsenite copper 65
- Ascaris lumbricoides 223
 vermicularis 224
- Asclepias 74
- Aspiration in pleurisy 307
- Astringent bath 39
- Athrepsia 122
- Atonic diarrhoea 178
- Atrophy, infantile 122
- Attention to the cord 93
- Auscultation 113, 253
 in diagnosis 113
- BALANITIS** 351
 etiology of 351
 symptoms of 351
 treatment of 351
- Bandage 91
- Baptisia 40
- Basilar meningitis 389
- Bath, acid 38
 alkaline sponge 37
 astringent 39
 stimulant 39
 tonic 39
- Baths 35
- Belladonna 13, 70, 76
- Benzoate lithium 71
- Bilious remittent fever 530
- Birth palsies 407
- Bitartrate potassium 69
- Bladder, extrophy of 350
- Blepharitis 556
 diagnosis of 556
 treatment of 556
- Bones at birth 110
- Bone changes in rickets 126
- Bottle nursing 100
- Brain at birth 108
- Bright's disease, acute 323
 chronic 329
- Bromide of ammonium 16
- Bronchiectasis 284
- Bronchitis, acute 278
- Bronchitis, acute, diagnosis
 of 280
 etiology of 278
 pathology of 278
 physical signs of 279
 prognosis of 280
 symptoms of 279
 treatment of 281
- chronic 282
 diagnosis of 284
 etiology of 283
 pathology of 283
 prognosis of 284
 symptoms of 283
 treatment of 284
- capillary 286
 in pertussis 488
- Broncho-pneumonia 286
- differential diagnosis of 290
- etiology of 286
- in diphtheria 443
 in measles 469
 pathology of 286
 physical signs of 289
 prognosis of 291
 symptoms of 288
 treatment of 291
- tubercular 507
 pathology of 507
 symptoms of 508
- Bryonia 15, 40, 45, 82
- CACHEXIA, malarial** 524
 treatment of 530
- Cactus grandiflorus 31
- Calcium sulphide 77
- Calculi, renal 343
 vesical 345
- Cancrum oris 143
- Capillary bronchitis 286
- Carbolic acid 79
- Carbonate of ammonium 22
 lithium 72
- Cardiac dilatation 317
 hypertrophy 318
 in chronic nephritis 331
- Care of the teeth 132
- Cascara sagrada 66
- Catarrh, acute nasal 254
 chronic 257
 classification of 258
 definition of 257
 diagnosis of 259

Catarrh, chronic, etiology of	258	Chorea, treatment of	379
pathology of	258	Choreic movements in cerebro-spinal meningitis	397
prognosis of	259	Chronic adenitis	430
prophylactic treatment of	262	Bright's disease	329
reflex symptoms of	259	bronchitis	282
symptoms of	258	catarrh	257
treatment of	259	endocarditis	316
gastric	166	physical symptoms of	319
gastro-intestinal	180	exudative nephritis	329
Catarrhal conjunctivitis	557	gastritis	166
laryngitis	262	hydrocephalus	404
pneumonia	286	interstitial nephritis	329
stomatitis	134	nephritis	329
Cathartics	55	non-exudative nephritis	329
Cellulitis in scarlatina	478	peritonitis	248
Center, heat-controlling	515	pharyngitis	147
Cerebral abscess	570	in syphilis	497
Cerebro-spinal meningitis	393	phthisis	506
Cestodes	219	pulmonary tuberculosis	506
Chafing and excoriation	95	tonsillitis	157
Chamomilla	23, 64	tonsillotomy in	157
Chelidonium	61	Cinchonidine	86
Cheyne-Stokes respiration	391	Circulation, remedies which influence	24
Chicken pox	463	Circulatory system	3
Child, clothing of the	91	in typhoid fever	545
how often washed	92	Circumcision	349
length of	111	Cirrhosis of the liver	243
the bandage for	91	Citrate of lithium	72
washing the	90	Classification of fevers	516
weaning of	103	remedies	9
weight of	110	Clothing of the child	91
Children, significance of temperature in	516	Cod-liver oil	43
Chills, congestive	524	Cold wet sheet pack	36
Chionanthus	60	Colic	174
Chloral hydrate	21	definition of	174
Chloride of lime	80	diagnosis of	175
Chloroform	20	etiology of	174
Cholera infantum	180, 184	pathology of	175
diagnosis of	186	prognosis of	175
etiology of	180	symptoms of	175
hygienic treatment of	188	treatment of	175
pathology of	182	Colitis	194
prognosis of	186	Colocynth	59
symptoms of	184	Coma, diabetic	337
treatment of	191	Compensation, cardiac	317
Chorea	376	Composition of cow's milk	97
definition of	376	of human milk	97
diagnosis of	379	Compression myelitis	423
etiology of	377	Confluent smallpox	452
pathology of	377	Conformation of the thorax	251
prognosis of	379	Congenital diseases of the heart	309
symptoms of	377		

- Congenital hernia 227
 malformations cause of ic-
 terus neonatorum 233
 malformations cause of in-
 testinal obstruction 207
 syphilis 494
 Congestion of the liver 238
 Congestive chills 524
 fever 524
 Conjunctiva, eczema of 559
 herpes of 559
 Conjunctivitis, treatment of 558
 catarrhal 557
 diagnosis of 558
 etiology of 557
 prognosis of 558
 symptoms of 557
 phlyctenular 559
 definition of 560
 diagnosis of 560
 etiology of 560
 prognosis of 560
 symptoms of 560
 treatment of 560
 scrofulous 560
 in measles 469
 Constipation 203
 diagnosis of 205
 etiology of 203
 prognosis of 205
 symptoms of 204
 treatment of 205
 cause of prolapsus ani 217
 Convulsions 360
 diagnosis of 362
 etiology of 360
 in acute meningitis 385
 in cerebro-spinal menin-
 gitis 395
 in tubercular meningitis 391
 in acute nephritis 325
 in chronic nephritis 331
 in gastro-enteritis 183
 in pertussis 489
 in pneumonia 206
 pathology of 361
 prognosis of 363
 symptoms of 361
 treatment of 363
 Coryza 254
 definition of 254
 diagnosis of 255
 etiology of 254
 symptoms of 255
 Coryza, treatment of 256
 Cough 252
 Cow's milk, composition of 97
 dilution of 98
 modification of 98
 proteids in 98
 reducing of 98
 reaction of 97
 sugar in 98
 increasing 98
 Cowpox 460
 Crocus sativus 75
 Croup 262
 diphtheritic 443
 membranous 266
 spasmodic 272
 Croupous pneumonia 293
 Cryptorchidism 359
 Cucurbita citrullus 68
 Cuprum arsenitis 65
 Curvatures of the spine 422
 diagnosis of 425
 etiology of 422
 treatment of 425
 Cystitis 346
DEAFNESS in cerebro-spi-
 nal meningitis 398
Deaf mutism in scarlatina 478
 Deformity of chest, result of
 adenoids 151
 in rickets 127
 Dentition as a factor in dia-
 rhea 177
 derangements of 130
 in malnutrition 120
 second 133
 Diabetes 334
 insipidus 334
 definition of 334
 diagnosis of 335
 etiology of 334
 pathology of 334
 prognosis of 335
 symptoms of 334
 treatment of 335
 mellitus 336
 definition of 336
 diagnosis of 337
 etiology of 336
 pathology of 336
 prognosis of 337
 symptoms of 336
 treatment of 338

Diabetes mellitus, dietetic			
treatment of	338	Diphtheria, treatment of	445
hygienic	338	Direct inguinal hernia	228
medicinal	338	medication	5
Diabetic coma	337	Discharge of heat	515
Diagnosis	113	Discrete smallpox	451
auscultation in	113	Diseases, febrile	514
expression	112	specific infectious	436
palpitation in	112	Diseases of the digestive ap-	
percussion in	113	paratus	130
physical	251	ears	567
Diaphragmatic hernia	229	eyes	555
Diarrhoea	176	genitals	347
acute dyspeptic	182	genito-urinary organs	323
cause of prolapsus ani . .	217	glands	427
diagnosis of	178	heart	308
etiology of	177	intestines	176
forms of	177	kidneys	323
from atony	177	larynx	262
from irritation	177	liver	230
inflammatory	193	nervous system	358
in pertussis	489	methods of diagnosis	359
pathology of	177	meninges	383
prognosis of	178	mouth	134
summer	180	nutrition	118
symptoms of	177	peritoneum	244
treatment of	178	pharynx	147
Difficulties in nursing the child	96	pleura	301
Dilatation of the heart	319	respiratory apparatus	250
Dilution of cow's milk	98	skin	572
Digestive apparatus	4	stomach	159
diseases of	130	Disorders of sleep	381
influence of irritants upon	4	Does the child need medicines immediately after birth	95
reflex effects upon	4	Dropsy in acute endocarditis	315
remedies which influence	52	in acute nephritis	325
system in typhoid fever	545	in chronic endocarditis	322
Digitalis	30	in chronic nephritis	331
Dioscorea	63	Dysentery	193
Diphtheria	436	Dyspepsia	166
complications of	443	Dyspeptic diarrhoea	182
definition of	436		
diagnosis of	444		
etiology of	437		
intubation in	449		
laryngeal	443		
nasal	442		
pathology of	438		
pharyngeal	442		
prognosis of	444		
prophylaxis	445		
symptoms of	440		
tracheotomy in	449		
		E A R, diseases of the	567
		foreign bodies in the	571
		Eczema	590
		definition of	590
		diagnosis of	593
		etiology of	590
		pathology of	590
		prognosis of	593
		symptoms of	591
		treatment of	594
		erythematous	591
		symptoms of	591
		intertrigo	593

INDEX.

Eczema madidans	592	Epilepsy, treatment of	369
papulosum	592	Epispadias	347
symptoms of	592	Epistaxis in chronic endocarditis	318
pustulosum	593	in chronic nephritis	332
symptoms of	593	in diabetes mellitus	337
rubrum	592	in pertussis	488
symptoms of	592	Ergot	19
squamosum	593	Eryngium	70
symptoms of	593	Erysipelas	580
vesiculosum	592	definition of	580
symptoms of	592	diagnosis of	582
of the conjunctiva	559	etiology of	581
Embolism	315	pathology of	581
Emetics	53	prognosis of	582
Emphysema in pertussis	488	symptoms of	581
Empyema	301	treatment of	582
pathology of	302	Erythema	574
prognosis of	306	definition of	575
symptoms of	303	etiology of	575
treatment of	307	forms of	575
Endocarditis, acute	313	symptoms of	575
definition of	313	treatment of	576
diagnosis of	315	caloricum	575
etiology of	313	gangrenosum	575
pathology of	314	intertrigo	575
prognosis of	315	in cerebro-spinal meningitis	398
symptoms of	314	in marasmus	123
treatment of	316	in rheumatism	609
chronic	316	multiforma	575
definition of	316	symptoms of	576
diagnosis of	321	treatment of	577
etiology of	316	nodosum	575
pathology of	316	symptoms of	576
prognosis of	321	treatment of	577
symptoms of	317	pernio	575
treatment of	321	scarlatinaform	575
in rheumatism	608	traumaticum	575
Enteric fever	538	venenatum	575
Enteritis	193	Eupatorium	47, 69
follicularis	193	perf.	75
Enterocolitis	193	Euphorbia	59
Enuresis	340	hypericifolia	58
etiology of	341	Examination of the heart	308
prognosis of	342	Excretory apparatus	4
symptoms of	341	over stimulation of	5
treatment of	342	stimulation of	5
Ephemeral fever	517	Excoration and chafing	95
Epilepsy	365	treatment of	95
diagnosis of	368	Extrophy of the bladder	350
etiology of	366	Exudative nephritis	329
pathology of	366	Eye, diseases of the	555
prognosis of	369		
symptoms of	366		

- FÆCAL OBSTRUCTION** 208
 Farinaceous foods 99
Fatty inunction 38
 liver 240
Febricula 517
 diagnosis of 518
 etiology of 517
 prognosis of 519
 symptoms of 517
 treatment of 519
Febrile diseases 514
Feeding in malnutrition 121
 regularity in 101
Femoral hernia 229
Fetid stomatitis 138
Fever, definition of 514
 bilious remittent 530
 congestive 524
 enteric 538
 ephemeral 517
 intermittent 521
 diagnosis of 525
 masked 523
 pernicious 524
 forms of 524
 treatment of 529
 symptoms of 521
 treatment of 526
 with gastric complications 523
 with inflammatory complications 523
 with nervous complications 523
 intestinal 538
remittent 530
 diagnosis of 534
 etiology of 530
 pathology of 530
 prognosis of 534
 symptoms of 531
 treatment of 534
 with brain complications 532
 with gastric complications 533
 with respiratory complications 533
 simple, continued 517
typhoid 538
 circulatory system in 545
 clinical characteristics of 538
 definition of 538
 diagnosis of 547
Fever, typhoid, differential
 diagnosis of 547
 digestive system in 545
 etiology of 538
 nervous system in 546
 pathological characteristics of 538
 pathology of 539
 prognosis of 548
 prophylaxis 549
 respiratory system in 546
 symptoms of 541
 temperature in 544
 the skin in 546
 treatment of 548
Fever, classification of 516
 pathology of 514
malarial 519
 definition of 519
 etiology of 519
 forms of 519
 pathology of 520
Fibrinous pneumonia 293
Fissured nipples 96
 treatment of 96
Follicular stomatitis 136
Food of the child 97
Foods, farinaceous 99
 infant 99
 malted 99
 milk 99
Foreign bodies in the ear 571
 symptoms of 572
 treatment of 572
Foreign bodies in the nose 257
Formaldehyde 80
Form in which remedies
 should be administered 6
Fowler's solution 87
French measles 472
Furunculosis 583
 definition of 583
 diagnosis of 584
 etiology of 583
 in diabetes mellitus 337
 pathology of 584
 prognosis of 584
 symptoms of 584
 treatment of 584

GANGRENOUS STOMA-
TITIS 143
Gastralgia 158

Gastralgia, definition of	158	Heart, congenital diseases of,	
diagnosis of	159	diagnosis of	310
etiology of	158	etiology of	309
pathology of	158	prognosis of	310
symptoms of	159	symptoms of	309
treatment of	159	treatment of	310
Gastric catarrh	166	diseases of	308
Gastritis, acute	162	examination of	308
definition of	162	physical examination of	308
etiology of	163	valvular disease of	317
pathology of	163	Heart of infant	109
prognosis of	165	Heat controlling center of	515
symptoms of	163	discharge of	515
treatment of	165	regulation of	515
chronic	166	source of	515
definition of	167	Hematuria, malarial	524
diagnosis of	170	Hemi-chorea	378
etiology of	167	Hemiplegia, spastic	406
forms of	170	Hemorrhage from the cord	94
pathology of	168	Hemorrhages in icterus	233
prognosis of	170	in scorbutis	123
symptoms of	169	Hemorrhagic smallpox	454
treatment of	171	Hepatitis, suppurative	242
Gastro-duodenitis	234	Hernia	227
enteritis, acute	180	congenital	227
diagnosis of	184	diaphragmatic	229
etiology of	180	diagnosis of	229
pathology of	181	direct	227
prognosis of	184	femoral	229
symptoms of	182	diagnosis of	229
treatment of	187	inguinal	228
dietetic	187	diagnosis of	228
hygienic	188	direct	228
prophylactic	187	treatment of	229
intestinal catarrh	180	umbilical	228
Gelsemium	11, 28, 40, 70	diagnosis of	228
Genitals, diseases of	347	varieties of	227
malformations of	347	Herpes	586
Genito-urinary organs, diseases of	323	definition of	586
German measles	472	diagnosis of	588
Glands of the neck	109	etiology of	587
Glycosuria	336	prognosis of	588
Grand mal	366	treatment of	589
Grindelia	52	conjunctivitis	559
Growths, adenoid	150	labialis	586
Gums, lancing of	131	symptoms of	587
H ABITS, regular	106	progenitalis	586
Haematogeneous jaundice	232	etiology of	587
Haemoptysis the result of		symptoms of	587
chronic endocarditis	318	zoster	586
Hamamelis	32, 59	etiology of	587
Heart, congenital diseases of	309	pathology of	587
		symptoms of	588
		treatment of	589

- Herpes in cerebro-spinal meningitis** 396
in pneumonia 296
varieties of 586
- Herpetic stomatitis** 136
- Hives** 577
- Hot wet sheet pack** 36
- How often should the child be washed** 92
- How to use the thermometer** 114
- Human milk, composition of** 97
reaction of 97
- Hutchinson's triad** 501
- Hydrangea** 71
- Hydrastis** 63
- Hydrate of chloral** 21
- Hydrocele** 352
diagnosis of 353
treatment of 353
varieties of 352
- Hydrocephalus** 403
acquired 404
acute 389
chronic 404
definition of 403
diagnosis of 405
etiology of 404
pathology of 404
prognosis of 406
symptoms of 405
treatment of 406
- congenital** 404
external 403
internal 403
- Hypophosphites** 52
- Hypospadias** 347
- ICTERUS** 231
neonatorum 231
diagnosis of 233
etiology of 231
pathology of 232
prognosis of 233
symptoms of 232
treatment of 233
- Ileo-colitis** 193
diagnosis of 197
etiology of 193
pathology of 194
prognosis of 197
symptoms of 195
treatment of 197
- catarrhal** 196
follicular ulcerative 196
- Ileo-colitis, membranous** 196
stomatitis a complication of 197
in measles 469
- Imperforate urethra** 347
etiology of 347
treatment of 347
- Impetigo contagiosa** 585
definition of 585
diagnosis of 586
etiology of 585
prognosis of 586
symptoms of 585
treatment of 586
- Incontinence of urine** 340
- Indigestion, chronic gastric** 166
- Infant feeding, selection of**
- bottle** 100
 - foods** 99
- Infantile atrophy** 122
- cerebral paralysis** 406
 - spinal paralysis** 416
 - syphilis** 494
 - diagnosis of** 501
 - etiology of** 494
 - pathology of** 496
 - prognosis of** 501
 - symptoms of** 497
 - treatment of** 502
- Infectious diseases** 436
- Inflammation of the meninges** 385
- Inflammatory diarrhoea** 193
- Inguinal hernia** 228
- Inhalation in croup** 271
- Intermittent fever** 521
- masked** 523
- Interstitial keratitis** 565
- in syphilis** 497
 - nephritis, acute** 323
 - chronic** 329
- Intertrigo** 575
- symptoms of** 576
 - treatment of** 577
- Intestinal canal, tuberculosis of** 199
- fever** 538
 - obstruction** 207
 - definition of** 207
 - from foreign bodies** 208
 - from intussusception** 209
 - from malformations** 207
 - from volvulus** 208
 - worms** 219

Intestinal worms, classification of	220	LANCING THE GUMS	131
etiology of	219	Lardaceous liver	241
nematodes, treatment of	225	Large white kidney	330
Intestine, small, at birth	110	Laryngeal diphtheria	443
Intubation in croup	272	Laryngitis	262
in diphtheria	449	catarrhal	262
in oedema glottidis	277	diagnosis of	264
Intussusception	209	etiology of	262
definition of	209	pathology of	262
pathology of	209	prognosis of	264
symptoms of	210	symptoms of	263
treatment of	211	treatment of	265
Inunction, fatty	38	forms of	262
quinine	38	pseudo-membranous	266
Inuncions	74	diagnosis of	269
Iodide ammonium	20	etiology of	267
Ipecacuanha	45, 54, 58	pathology of	267
Iritis in syphilis	497	prognosis of	269
Irritative diarrhoea	177	symptoms of	268
Iron sulphate	79	treatment of	270
Itch	600	spasmodic	272
JADELOT'S lines in diagnosis	112	diagnosis of	273
Jaundice	231	etiology of	272
after early infancy	234	pathology of	272
causes of	234	prognosis of	274
diagnosis of	236	symptoms of	273
pathology of	234	treatment of	274
prognosis of	236	submucous	275
symptoms of	235	Length of child	111
treatment of	236	Leptandra	64
hæmatogeneous	232	Lepto-meningitis	383
obstructive	231	Lichen tropicus, symptoms of .	574
KERATITIS, interstitial	565	Lime, chloride of	80
definition of	565	Liquor sodæ chlorinate	80
diagnosis of	566	Lithium benzoate	71
etiology of	565	carbonate	72
prognosis of	566	citrate	72
symptoms of	565	Lithotomy	346
treatment of	566	Lithotrity	346
parenchymatous	565	Liver, abscess of	242
syphilitic	565	diagnosis of	242
Kidney, amyloid	329	etiology of	242
contracted	329	prognosis of	242
granular	325	symptoms of	242
large white	330	treatment of	242
Kidneys, acute inflammation of	323	amyloid	241
chronic inflammation of	329	diagnosis of	242
		etiology of	241
		pathology of	241
		prognosis of	242
		symptoms of	241
		treatment of	242
		cirrhosis of	243

Liver, cirrhosis of, etiology of	243	Marasmus, pathology of	122
pathology of	243	prognosis of	123
prognosis of	243	symptoms of	122
symptoms of	243	treatment of	123
treatment of	243	Masked intermittent fever	523
congestion of	238	Mastoid disease	570
diagnosis of	239	Mastoiditis, treatment of	571
etiology of	238	Masturbation	356
pathology of	238	reflex effects of	356
prognosis of	239	symptoms of	357
symptoms of	239	treatment of	357
treatment of	240	Mastitis in parotitis	493
diseases of	230	Matricaria	23
displacement of	231	McBurney's point	213
fatty	240	Measles	465
causes of	240	French	472
diagnosis of	241	German	472
pathology of	240	Medication, direct	5
prognosis of	241	Medicine, dose of	8
symptoms of	240	Membranous croup	266
treatment of	241	Meninges, inflammation of	385
of infant	109	Meningitis, acute	383
outlined	231	definition of	383
position of	231	diagnosis of	386
Lobar pneumonia	293	etiology of	384
Lobelia	17, 30, 46	pathology of	384
Lobular pneumonia	286	prognosis of	386
Lung fever	293	subdivisions of	384
Lycopus	29, 48	symptoms of	384
Lymphatism	258, 427	treatment of	386
cause of chronic bronchitis	283	basilar	389
M ACROTYS	82	cerebro-spinal	393
Malaria, characteristics of	519	definition of	393
manifestations of	519	diagnosis of	399
Malarial cachexia	524	etiology of	393
hematuria	524	pathology of	395
Malarial fevers	519	prognosis of	400
Malformations of the genitals	347	symptoms of	395
Malnutrition	118	treatment of	400
diagnosis of	120	types of	395
etiology of	119	in otitis	570
prognosis of	121	tubercular	389
symptoms of	119	definition of	389
treatment of	121	diagnosis of	391
Malted foods	99	etiology of	389
Manganese sulphate	65	pathology of	389
Marasmus	122	prognosis of	391
definition of	122	symptoms of	389
diagnosis of	123	treatment of	391
etiology of	122	Miliaria	573
		crystallina	573
		definition of	573
		diagnosis of	574

- Miliaria, etiology of 573
 rubra 573
 symptoms of 573
 treatment of 574
- Miliary tubercles 505
- Milk, cow's, composition of . 97
 modification of 98
 reaction of 97
 human, composition of . 97
 reaction of 97
- Milk foods
- Morbilli
- Multiple neuritis
 definition of
 diagnosis of
 etiology of
 pathology of
 prognosis of
 symptoms of
 treatment of
- Mumps
- Myelitis, acute
 definition of 411
 diagnosis of 414
 etiology of 411
 pathology of 412
 prognosis of 414
 subdivisions of 411
 symptoms of 412
 treatment of 415
 compression 423
- Myocarditis in diphtheria . . 443
- NAEVUS 603
 definition of 603
 etiology of 603
 flammens 604
 prognosis of 604
 symptoms of 603
 treatment of 604
 simplex 604
- Nasal catarrh, acute 254
 diphtheria 442
 polypi 257
- Nematodes 223
- Nepeta cataria 75
- Nephritis, acute 323
 diagnosis of 326
 etiology of 324
 interstitial 323
 parenchymatous 323
 pathology of 324
 prognosis of 326
 symptoms of 325
- Nephritis, acute, treatment
 of 326
 chronic 329
 diagnosis of 332
 etiology of 329
 exudative 329
 interstitial 329
 non-exudative 329
 parenchymatous 329
 pathology of 329
 prognosis of 332
 symptoms of 330
 treatment of 332
 complication of scarlatina 479
 scarlatinal 324
 ous system 1
 diseases of 358
 in typhoid fever 546
 remedies which influence 10
 rest to 2
 le rash 577
 ritis, multiple 419
- Night terrors 382
 causes of 382
 treatment of 383
 result of adenoids 151
- Nitrate potassium 69
 sanguinaria 49
- Nitric acid 87
- Noma 143
- Nose, foreign bodies in . . . 257
- Nurse 101
- Nursing bottle 100
- Nutrition, diseases of 118
- Nux vomica 18, 41, 63
- OBSTRUCTION, faecal 268
 intestinal 207
- Obstructive jaundice 231
- Œdema glottidis 275
 diagnosis of 276
 etiology of 275
 pathology of 275
 prognosis of 276
 symptoms of 276
 treatment of 277
 pulmonary 315, 318
- Œnanthe crocata 24
- Oil, cod-liver 43
- Onanism 356
- Ophthalmia neonatorum . . 561
 diagnosis of 563
 etiology of 561
 pathology of 562

Ophthalmia neonatorum,	Parenchymatous keratitis	565
prognosis of	nephritis, chronic	329
symptoms of	Parotitis	491
treatment of	complications of	493
prophylaxis	definition of	491
Optic neuritis in acute meningo-	diagnosis of	493
gitis	etiology of	491
Opisthotonus	pathology of	492
Orchitis in parotitis	prognosis of	493
Otitis	symptoms of	492
acute catarrhal	treatment of	493
purulent	Passiflora	23
diagnosis of	Pathology of fevers	514
etiology of	Pavor nocturnus	382
in measles	Pemphigus	596
in scarlatina	definition of	596
in syphilis	diagnosis of	596
mastoid complication	etiology of	596
meningitis in	pathology of	596
pathology of	prognosis of	597
prognosis of	symptoms of	596
result of adenoids	treatment of	597
symptoms of	Pepsin	65
treatment of	Percussion	112, 253
PACK, wet sheet, cold	in diagnosis	113
hot	Pericarditis	310
Palpation	definition of	310
in diagnosis	diagnosis of	312
Palsies, prenatal	etiology of	310
Paralysis, acute atrophic	in rheumatism	608
infantile cerebral	pathology of	311
etiology of	prognosis of	312
diagnosis of	symptoms of	311
pathology of	treatment of	313
prognosis of	Peritonitis	244
symptoms of	acute	244
treatment of	diagnosis of	246
varieties of	etiology of	244
infantile spinal	pathology of	245
diagnosis of	prognosis of	246
differential diagnosis of .	symptoms of	245
etiology of	treatment of	246
pathology of	chronic	248
prognosis of	etiology of	248
symptoms of	pathology of	248
treatment of	prognosis of	249
Potts'	symptoms of	245
Paraphimosis	tubercular	248
treatment of	diagnosis of	249
Paraplegia	etiology of	248
spastic	pathology of	248
Paratyphilitis	prognosis of	250
	symptoms of	249
	treatment of	250
	Peritoneum, diseases of	244
	Perityphilitic abscess	212

INDEX.

- Perityphilitis 212
 Permanganate, potassium 81
 Pernicious intermittent fever 524
 Pertussis 485
 complications of 488
 definition of 485
 diagnosis of 489
 etiology of 485
 pathology of 486
 prognosis of 489
 symptoms of 487
 treatment of 489
 Petechial fever 393
 Petit mal 366, 368
 Pharyngeal diphtheria 442
 Pharyngitis, acute 146
 definition of 146
 diagnosis of 146
 etiology of 146
 pathology of 146
 prognosis of 147
 symptoms of 146
 treatment of 147
 chronic 147
 etiology of 148
 diagnosis of 148
 pathology of 148
 symptoms of 148
 treatment of 149
 Phimosis 348
 cause of prolapsus ani 217
 reflex effects of 348
 treatment of 349
 Phlyctenular conjunctivitis 559
 Phosphorus 22, 50
 Photophobia in cerebro-spinal
 meningitis 398
 Phthisis, chronic 507
 pathology of 507
 symptoms of 508
 Physical diagnosis 251
 Physiology 108
 Phytolecca 47, 83
 Plastic pleurisy 301
 Pleurisy 301
 diagnosis of 305
 differential diagnosis of 305
 etiology of 301
 pathology of 302
 physical signs of 303
 plastic 301
 prognosis of 306
 sero-fibrinous 302
 subdivisions of 301
 Pleurisy, surgical treatment
 of 307
 symptoms of 303
 treatment of 306
 Pneumonia 286
 croupous 293
 fibrinous 293
 in scarlatina 478
 lobar 293
 definition of 293
 diagnosis of 297
 differential diagnosis
 of 298
 etiology of 293
 pathology of 293
 physical signs of 296
 prognosis of 298
 symptoms of 294
 treatment of 299
 subdivisions of 286
 Pneumonitis 293
 Podophyllin 62
 Poliomyelitis, acute 416
 Polydipsia in diabetes 334
 Polymnia uvredalia 88
 Polypi, nasal 257
 Polyuria 334
 in diabetes mellitus 337
 Pomegranate bark 223
 Post-diphtheritic paralysis 444
 Posterior curvature of spine in
 rickets 127
 Potassium, acetate 69
 bitartrate 69
 nitrate 69
 permanganate 81
 Potts' disease 423
 etiology of 423
 pathology of 423
 prognosis of 425
 symptoms of 424
 treatment of 426
 paralysis 423
 Powders 8
 Prenatal palsies 407
 Priapism 413
 Prickly heat 573
 Production of temperature 515
 Prolapsus ani 216
 definition of 216
 etiology of 216
 in ileo-colitis 196
 symptoms of 217
 treatment of 217

- Pseudo-membranous laryngitis 266
 Ptosis in acute meningitis 385
 Pulmonary œdema 318
 in chronic nephritis 332
 Pulsatilla 17
 Pulse 116
 frequency of 116
 instability of 113
 normal rate 116
 relation to temperature 117
 resistance of 117
 strength of 116
 Purpuric fever 393
 Purpura in cerebro-spinal meningitis 396
 Putrid stomatitis 138
- QUININE INUNCTION** 38
 sulphas 85
 Quinsy 155
- RACHITIS** 125
 definition of 125
 diagnosis of 128
 etiology of 125
 pathology of 126
 prognosis of 129
 symptoms of 126
 treatment of 129
 Reaction of cow's milk 97
 of human milk 97
 Regular habits 106
 Regularity in feeding 101
 Regulation of heat 515
 of temperature 515
 Remedies, classification of 9
 method of administering 7
 which influence the circulation 24
 which influence the digestive apparatus 52
 which influence the nervous system 10
 which influence the respiratory apparatus 44
 which influence the skin 72
 which influence the temperature 34
 which influence the urinary apparatus 67
 Remittent fever 530
 Renal calculi 344
 etiology of 343
- Renal calculi, symptoms of 344
 treatment of 344
 Respiration 117, 251
 changes in character of 252
 character of 118
 rate of 117, 252
 type of 252
- Respiratory apparatus, remedies which influence 44
 organs, diseases of 250
 description of 250
 methods of examining 250
 system in typhoid fever 546
- Rest to nervous system 2
 Retention of urine 339
 Rheum 57
 Rheumatism 606
 cause of chronic endocarditis 316
 diagnosis of 609
 etiology of 607
 in scarlatina 478
 pathology of 607
 prognosis of 609
 symptoms of 607
 treatment of 609
- Rheumatic manifestations 606
 torticollis 609
- Rhinitis, acute 254
 atrophic 258
 chronic, classification of 258
 hypertrophic 258
 syphilitic 258
- Rhus aromatica 71
 Rhus tox. 13, 29, 40, 76
 Rickets 125
 Ringworm 597
 Roseola 575
 symptoms of 575
- Rothenil 472
 Rubella 472
 definition of 472
 diagnosis of 473
 etiology of 472
 prognosis of 473
 symptoms of 472
 treatment of 474
- Rubeola 495
 complications of 469
 definition of 465
 diagnosis of 469
 etiology of 465
 pathology of 466
 prognosis of 469

- Rubeola, symptoms of 466
 treatment of 469
- Rumex. 51
- SALICYLIC ACID** 82
 Salts, alkaline 42, 83
- Sanguinaria 48
- Sanguinarine nitrate 49
- Santonine 66
- Scabies 600
 diagnosis of 601
 etiology of 600
 pathology of 600
 symptoms of 600
 treatment of 602
- Scarlatina 474
 anginosa 476
 complications of 478
 definition of 474
 desquamation 477
 diagnosis of 479
 etiology of 474
 forms of 476
 maligna 477
 pathology of 475
 prognosis of 480
 prophylaxis 480
 simplex 476
 symptoms of 476
 treatment of 480
- Scille 51
- Scoliosis 422
 etiology of 422
 pathology of 423
 prognosis of 425
 symptoms of 424
 treatment of 426
- Scorbutis. 123
 definition of 123
 diagnosis of 124
 etiology of 124
 pathology of 124
 prognosis of 125
 symptoms of 124
 treatment of 125
- Serofulous conjunctivitis 560
- Second dentition 133
- Sedatives. 73
- Senega. 50
- Septic poisoning cause of icterus 233
- Serpentaria 76
- Shingles 588
- Significance of temperature in children 516
- Simple acute meningitis 384
- Simple adenitis 428
- Simple continued fever 517
- Skin, diseases of 572
 remedies that influence the 72
- Sleep, disorders of 381
 disturbed or restless 382
- Sleeping 105
- Small intestines at birth 110
- Smallpox 449
- Snuffles 498
- Source of heat 515
- Spasmodic croup 272
 laryngitis 272
- Spastic diplegia 406
- Specific infectious diseases 436
- Spine, curvature of 422
 lateral curvature of 422
 posterior curvature of 423
- Spiritus ætheris nitroso 31, 68
- Sponge bath, alkaline 37
- Sponging 37
- Spotted fever 393
- Sprue 141
- Sputa 253
 in bronchitis 279
 in pneumonia 297
- Stillingia. 47
- Stimulants 44, 74
- Stimulant bath 39
- Sticta 51, 83
- Stomatitis 134
 aphthous 136
 definition of 136
 etiology of 136
 diagnosis of 137
 pathology of 136
 prognosis of 137
 symptoms of 136
 treatment of 138
- cattarhal 134
 definition of 134
 etiology of 134
 pathology of 135
 symptoms of 135
 treatment of 135
- erythematosa 134
 fetid 138
 gangrenous 143
 definition of 143
 diagnosis of 144

Stomatitis, gangrenous, etiology of	143	Tabes Mesenterica, symptoms of	200
pathology of	143	treatment of	202
prognosis of	145	Taenia	220
symptoms of	143	bothriocephalus latus	220
treatment of	145	cucumerina	220
in ileo-colitis	197	mediocanellata	220
mycosa	141	sodium	221
definition of	141	Tapeworms	219
diagnosis of	142	Teeth, the	109
etiology of	141	care of	132
pathology of	141	deciduous	133
prognosis of	142	period of eruption	132
symptoms of	142	Temperature	113
treatment of	142	fluctuations of	115
putrid	138	in typhoid fever	544
simplex	134	instability of	113
ulcerative	138	production of	515
definition of	138	regulation of	515
diagnosis of	140	remedies which influence	34
etiology of	139	significance of	115
pathology of	139	Terrors, night	382
prognosis of	140	Testicle, undescended	350
symptoms of	139	Tetany	374
treatment of	140	definition of	374
Strabismus in acute meningitis	385	diagnosis of	376
in cerebro-spinal meningitis	397	etiology of	374
Strophanthus	32	pathology of	375
St. Vitus dance	376	prognosis of	376
Submucous laryngitis	275	symptoms of	375
Sudamina	573	treatment of	376
Sulphate of iron	79	Trousseau's symptom	375
of manganese	65	Tetanus	372
of quinine	85	definition of	372
Sulphurous acid	79	diagnosis of	373
Summer complaint	180	etiology of	372
diarrhoea	180	pathology of	372
Suppression of urine	339	prognosis of	373
Suppurative hepatitis	242	symptoms of	372
Sweet spirit of nitre	31, 68	treatment of	374
Syphilis, congenital	494	Thermometer, use of	114
infantile	494	Thorax in children	109
Syphilitic keratitis	565	confirmation of	251
Syrups	8	Thrush	141
System, circulatory	3	in marasmus	123
TABES MESENTERICA	199	Thymol	79
diagnosis of	201	Tinea capitis	598
etiology of	199	circinata	597
pathology of	199	diagnosis of	599
prognosis of	201	symptoms of	598
		treatment of	599
		tonsurans	597
		diagnosis of	599

Tinea tonsurans, symptoms of	598
treatment of	599
trichophytina	597
etiology of	597
pathology of	598
prognosis of	599
varieties of	597
Tonic bath	39
Tonsillitis	153
acute phlegmonous	154
chronic	154
definition of	153
etiology of	153
follicular	154
forms of	153
in rheumatism	609
pathology of	153
symptoms of	154
treatment of	156
Tonsillotomy	157
Tracheotomy, in croup	272
in diphtheria	449
in œdema glottidis	277
Trichocephalus dispar	224
Tubercular adenitis	430
meningitis	389
peritonitis	248
Tuberculosis	504
broncho-pneumonia	507
chronic pulmonary	506
definition of	504
diagnosis of	509
etiology of	504
of intestines	199
pathology of	505
prognosis of	509
symptoms of	506
treatment of	509
Types of respiration	252
Typhilitis	212
Typhoid fever	538
ULCERATION OF THE UMBILICUS	94
Ulcerative stomatitis	138
in scurvy	139
Umbilical hernia	228
Undescended testicle	350
Uræmia in acute nephritis	325
in chronic nephritis	331
Urethra, imperforate	347
Urethritis	351
symptoms of	352
Urethritis, treatment of	352
Urinary apparatus, remedies which influence	67
Urine, incontinence of	340
retention of	339
causes	339
symptoms	340
treatment	340
suppression of	339
in acute nephritis	325
Urticaria	577
definition of	577
diagnosis of	579
etiology of	577
pathology of	578
symptoms of	578
treatment of	579
Uvedalia	60, 88
VACCINA	460
Vaccination	460
complications of	463
history of	460
methods of	461
Vaccine vesicle	461
Valvular diseases of the heart	317
Valvular heart disease, aortic regurgitation	320
aortic stenosis	320
mitral regurgitation	319
stenosis	319
tricuspid regurgitation .	320
Varicella	463
definition of	463
diagnosis of	464
etiology of	463
prognosis of	464
symptoms of	463
treatment of	464
Variola	449
confluent form	452
definition of	449
discrete form	451
etiology of	449
forms of	451
hemorrhagic form	454
pathology of	450
prognosis of	456
prophylaxis	457
symptoms of	451
treatment of	456
Varioloid	455
diagnosis of	456
prognosis of	456

Varioloid, symptoms of	455	Vulvo-vaginitis	354
treatment of	456	causes of	354
Veratrum	27, 39, 45	definition of	354
Vesical calculi	345	symptoms of	354
diagnosis of	346	treatment of	355
etiology of	345		
prognosis of	346	WASHING THE CHILD	90
symptoms of	345	Waxy liver	241
treatment of	346	Weaning the child	103
Vesical calculus cause prolapse sus ani	217	Weight of child	110
Vesicular stomatitis	136	Wet nurse	101
Volvulus	208	Wet sheet pack, cold	36
definition of	208	hot	36
symptoms of	209	Whooping cough	485
Vomiting	161	Worms, cestodes	219
causes of	161	intestinal	219
from disease of brain	161	taenia	220
from intestinal obstruction	161	varieties of	220
in pertussis	489		
treatment of	162	ZOSTER	586

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